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समाचार पत्रों से चयित अंश
Newspapers Clippings

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Fri, 05 Feb 2021 7:43PM

DRDO hands over Licensing Agreements for Transfer of Technology for 14 technologies to 20 industries

Defence Research and Development Organisation (DRDO) participated in the 'Bandhan' ceremony at Aero India 2021 in Yelahanka, Bengaluru on February 05, 2021 to enhance cooperation and synergy between industry and Government organisations. In the program, Raksha Mantri Shri Rajnath Singh, Chief of Defence Staff General Bipin Rawat, three Services Chiefs, Secretary Department of Defence R&D and Chairman DRDO Dr G Satheesh Reddy and Secretary (Defence Production) Shri Raj Kumar along with other senior officials from Ministry of Defence & Karnataka Government and industrialists from entire country were present. The Transfer of Technologies (ToTs) were handed over in the presence of dignitaries, by the DRDO laboratories to the industry.

The DRDO handed over Licensing Agreements for ToT (LAToT) for 14 DRDO developed technologies to 20 industries. The technologies transferred are from the area of electronics, laser technology, armaments, life sciences, materials science, combat vehicles, naval systems, aeronautics, sensors, etc. The product technologies transferred are Low Level Transportable Radar (LLTR), Inertial Navigation System for Ship Application (INS-SA), Long Range Optical Target Locator (OTL 1500), Hand Held Through Wall Imaging Radar (HH-TWIR) and Commander TI (Thermal Imager) Sight for T-72 Tank are the sensor technologies transferred to various industries. NMRL-Fuel Cell based Air Independent Propulsion Technology for Naval Submarines named NMFCAIP is a unique capability developed by DRDO and now transferred to the industry. Multi Agent Robotic System (MARS) will be produced by Indian industry based on DRDO design.

In his address, Raksha Mantri said Bandhan exemplifies the spirit of 'public-private partnership'. He added that the fountain head of any capability emerges from its foundation and the foundation of our vision rests on three pillars namely, research and development, public and private defence production and defence export. He mentioned that with an aim of encouraging the manufacture of defence related items in India, our endeavour will remain to bring down the defence imports by at least two billion dollars by 2022.

Shri Rajnath Singh also stated that the order of 83 Light Combat Aircraft (LCA) Tejas MK1 worth over Rs 48,000 crore will give a big boost to defence manufacturing specially to the aviation industry. He highlighted that the negative list of 108 items for import is also meant to provide opportunity to the domestic manufacturing sector to strengthen their base and contribute to Aatmanirbhar Bharat.

Many armament systems, namely 155 mm X 52 Cal Advance Towed Artillery Gun System (ATAGS), Mechanical Mine Layer - Self Propelled (MML– SP) and Prachand Anti-Tank Munition are handed over to the industry for production. Other technologies that are transferred today for production by Indian industry are Individual Under Water Breathing Apparatus (IUWBA), *Basic

WhAP 8x8 & Add-on Armour for WhAP and *4 MW Diesel Engine Infrared Signature Suppression System. An MoU was exchanged between DRDO and HAL to cooperate and finalize the aspects of ToTs of Uttam radar for new LCA configurations and new generation Radar Warning Receiver (RWR-NG).

These high technology products will provide impetus to Atmanirbhar Bharat drive of Govt. of India and boost the defence manufacturing sector with self reliance and enhance the operation capabilities of Armed Forces.

https://pib.gov.in/PressReleaseIframePage.aspx?PRID=1695630

पत्र सूचना कार्यालय
भारत सरकार

रक्षा मंत्रालय

Fri, 05 Feb 2021 7:43PM

डीआरडीओ ने 20 उद्योगों को 14 प्रौद्योगिकियों के लिए प्रौद्योगिकी हस्तांतरण के लिए लाइसेंसिंग समझौते सौंपे

रक्षा अनुसंधान एवं विकास संगठन (डीआरडीओ) ने उद्योग और सरकारी संगठनों के बीच सहयोग व तालमेल बढ़ाने के लिए 05 फरवरी, 2021 को येलहंका, बेंगलुरु में एयरो इंडिया 2021 में 'बंधन' समारोह में हिस्सा लिया। इस कार्यक्रम में रक्षा मंत्री श्री राजनाथ सिंह, चीफ ऑफ डिफेंस स्टाफ जनरल बिपिन रावत, तीनों सैन्य सेवाओं के प्रमुख, रक्षा शोध एवं विकास (आरएंडडी) विभाग के सचिव, डीआरडीओ के अध्यक्ष डॉ. जी सतीश रेड्डी और सचिव (रक्षा उत्पादन) श्री राज कुमार रक्षा मंत्रालय, कर्नाटक सरकार के अन्य अधिकारियों और देश भर से आए उद्योगपतियों के साथ उपस्थित रहे। गणमान्य व्यक्तियों की उपस्थिति में डीआरडीओ प्रयोगशालाओं द्वारा उद्योग को ट्रांसफर ऑफ टेक्नोलॉजी (टीओटी) सौंपे गये।

डीआरडीओ ने 20 उद्योगों को डीआरडीओ विकसित 14 प्रौद्योगिकियों की टीओटी के लिए लाइसेंसिंग समझौतों (एलएटीओटी) को सौंपा। ये सौंपी गई प्रौद्योगिकियां इलेक्ट्रॉनिक्स, लेजर तकनीक, आयुध, आयुर्विज्ञान, पदार्थ विज्ञान, लड़ाकू वाहन, नौसेना प्रणाली, एयरोनॉटिक्स, सेंसर इत्यादि क्षेत्रों से जुड़ी हैं। विभिन्न उद्योगों को सौंपे गए प्रौद्योगिकी उत्पादों में लो लेवल ट्रांसपोर्टेबल रडार (एलएसटीआर), जहाजों में लगने वाले इनर्शियल नेविगेशन सिस्टम (आईएनएस-एसए), लंबी दूरी के ऑप्टिकल टारगेट लोकेटर (ओटीएल 1500), हाथ में लिये जा सकने वाले वॉल इमेजिंग रडार (एचएच-टीडब्ल्यूआईआर) और टी-72 टैंक के लिए कमांडर टीआई (थर्मल इमेजर) जैसी सेंसर प्रौद्योगिकियां शामिल हैं। डीआरडीओ द्वारा नौसेना की पनडुब्बियों के लिए एनएमआरएलएआईपी नाम से विकसित एनएमआरएल-फ्यूल सेल आधारित एयर इंडिपेंडेंट प्रोपल्शन टेक्नोलॉजी एक अद्वितीय क्षमता है और अब उद्योग को सौंप दिया गया है। भारतीय उद्योग द्वारा उत्पादित मल्टी एजेंट रोबोटिक सिस्टम (एमएआरएस) डीआरडीओ डिजाइन पर आधारित होगा।

अपने संबोधन में, रक्षा मंत्री ने कहा कि बंधन 'लोक-निजी भागीदारी' की भावना का उदाहरण पेश करता है। उन्होंने कहा कि किसी भी क्षमता का मूल स्रोत उनकी बुनियाद से आता है और हमारे दृष्टिकोण की बुनियाद तीन स्तंभों- अनुसंधान एवं विकास, लोक-निजी रक्षा उत्पादन और रक्षा निर्यात पर आधारित है। उन्होंने उल्लेख किया कि भारत में ही रक्षा संबंधी वस्तुओं के निर्माण को प्रोत्साहित करने के उद्देश्य के साथ, हमारा प्रयास होगा कि 2022 तक रक्षा आयात को कम से कम दो अरब डॉलर तक लाया जाए।

श्री राजनाथ सिंह ने यह भी कहा कि 48,000 करोड़ रुपये से ज्यादा की कीमत के 83 हल्के लड़ाकू विमान (एलसीए) तेजस एमके1 की खरीद सौदा विमानन उद्योग, खास तौर पर रक्षा विनिर्माण को एक बड़ा उछाल देगा। उन्होंने रेखांकित किया कि आयात के लिए 108 वस्तुओं की निगेटिव लिस्ट भी घरेलू विनिर्माण क्षेत्र को अवसर उपलब्ध कराने के लिए है, ताकि वे अपनी बुनियाद मजबूत कर सकें और आत्मनिर्भर भारत में योगदान कर सकें।

कई आयुध प्रणालियों, जैसे 155 एमएम एक्स 52 कैल एडवांस टो आर्टिलरी गन सिस्टम (एटीएजीएस), मैकेनिकल माइन लेयर-सेल्फ प्रोपेल्ड (एमएमएल-एसपी) और प्रचंड टैंक रोधी शस्त्र को उत्पादन के लिए उद्योग को सौंपा गया है। उत्पादन के लिए भारतीय उद्योग को आज सौंपी जाने वाली अन्य प्रौद्योगिकियों में इंडविजुअल अंडर वाटर ब्रीदिंग ऐपरेटस (आईयूडब्ल्यूबीए), *बेसिक डब्ल्यूएचएपी 8x8 और डब्ल्यूएचएपी के लिए जोड़े जा सकने वाले कवच और *4 मेगावाट डीजल इंजन इन्फ्रारेड सिग्नेचर सप्रेशन सिस्टम शामिल हैं। डीआरडीओ और एचएएल के बीच नए एलसीए विन्यास और नई पीढ़ी के रडार वार्निंग रिसीवर (आरडब्ल्यूआर-एनजी) के लिए सहयोग और उत्तम रडार की टीओटी से जुड़े पक्षों को अंतिम रूप देने के लिए एक समझौता-पत्र का आदान-प्रदान किया गया।

ये उच्च प्रौद्योगिकी उत्पाद भारत सरकार के आत्मनिर्भर भारत अभियान को रफ्तार और आत्मनिर्भरता के साथ रक्षा विनिर्माण क्षेत्र को बढ़ाएंगे और सशस्त्र बलों की संचालनात्मक क्षमताओं को उन्नत बनाएंगे।

https://pib.gov.in/PressReleasePage.aspx?PRID=1695757

Hindustan Times

Sat, 06 Feb 2021

DRDE develop standard for Nuclear, Biological & chemical war protective clothing

India became the 4th country to have a national standard for Nuclear Biological and Chemical (NBC) permeable protective clothing, said DRDE officials

By Shruti Tomar

Bhopal: After experiments and research for 30 years, Defence Research Development Establishment (DRDE) Gwalior developed a national standard for qualitative and quantitative method of determining breakthrough and permeation of Nuclear Biological and Chemical (NBC) permeable protective clothing, said DRDE officials.

The Bureau of Indian Standards standardised the method, making India the fourth country after the US, UK and Germany to have its own national standard, claimed DRDE officials.

NBC suits are meant to protect in a hostile environment with chemical/biological agents and against radioactive fallout dust(Handout)

NBC suits are meant to protect soldiers in a hostile environment with chemical/biological agents and against radioactive fallout dust. The suits are designed to be worn for extended periods while continuing to operate in a combat environment.

DRDE joint director and head of test and evaluation Manisha Sathe said, "In NBC defence technologies, these are the first Indian Standards developed by DRDE. Earlier, the DRDE had developed various test methods for different NBC items as per the desired requirement and specification. After meticulous experimentation, methods have been developed and validated. Developed methods were further submitted for standardisation."

“Under the Protective Textiles Sectional Committee, Bureau of Indian Standards (BIS) has published IS 17377 in two parts in 2020. This standard also provides relative ranking or material screening information about the ability of test materials to resist chemical war breakthrough,” she added.

“This will also promote ‘Make in India’. It is expected to fulfil the long-pending needs of services. Developers, vendors and new startups in this field will assist them in streamlining their procurement and products. It will also ensure that only acceptable quality reaches the user which leads to a reduction in fatal casualties to the securities forces,” said AK Singh, director DRDE.

This work has been successfully done by a team of DRDE scientists Manisha Sathe, joint director and head of Test & Evaluation Division, Shiv Prakash Sharma, Dr Prabhat Garg, Dr Virendra Vikram Singh, Pushpendra Sharma and other technical staff of TED.

https://www.hindustantimes.com/india-news/drde-develop-standard-for-nuclear-biological-chemical-war-protective-clothing-101612504929368.html

THE HANS INDIA

Sat, 06 Feb 2021

DFRL unveils food products for forces, Gaganyaan astronauts

By Aksheev Thakur

Highlights

The Defence Food Research Laboratory (DFRL) under the aegis of Defence Research Development Organisation (DRDO) has come out with space food products...

The Defence Food Research Laboratory (DFRL) under the aegis of Defence Research Development Organisation (DRDO) has come out with space food products for the astronauts who will be going on the first ever human space mission, Gaganyaan.

DFRL showcased an array of food products on Friday at the Aero India 2021, some of which are to undergo tests.

DFRL unveils food products for forces, Gaganyaan astronauts

Dr Rudra Gowda, Scientist at the DRDO said that DFRL is a force behind the forces. The DFRL has come out with a milk testing kit meant for detection of adulteration and microbial quality. "We have done an elaborate study before coming out with these products.

The strip based testing kits are meant to detect the presence of added adulterants like urea, boric acid, pulverised soap, detergents, hydrogen peroxide, starch and neutralisers," he told The Hans India. "Gowda added that the kit was developed last year. We have made it for the armed forces. But this could be used by the civilians as well," he added.

DFRL has come out with 42 food products. DFRL is also developing a multi menu to cater to the taste buds of the armed forces deployed in different regions across the country.

Another scientist working with the organisation, Dr Palmurugan apprised about the development of edible cutlery.

"Edible cutlery has been developed in the form spoons, fork soup spoons using food materials such as starch and fibers. Edible cutlery can be made to impart taste and texture using different flavour and colour with food ingredients of plant origin," he said.

Showing biodegradable glass Palmurugan said the glasses can be used by the animals as food.

"It has been developed recently. We are going for a test," he added. For the troops serving in the high altitude region, DFRL has come out with rechargeable self heating food warmer. Gowda stated that as the temperature tends to freeze the MRE food packets making it unfit for consumption by the soldiers.

The reheating time is approximately 15 minutes. It provides adequate temperature to in pack food pouches. The trials have been conducted at various army units at Jodhpur, Northern command Udhampur. Jammu and Kashmir, Bengaluru.

https://www.thehansindia.com/news/national/dfrl-unveils-food-products-for-forces-gaganyaan-astronauts-670598?infinitescroll=1

TIMESNOWNEWS.COM

Fri, 05 Feb 2021

Historic defence order of 118 indigenous Arjun 1A tanks on the anvil

In another feather in the Indian Army's cap, an order for two regiments of the new indigenous Arjun 1A tank is on the anvil. The total cost of this deal would be Rs 8,956 crore

By Srinjoy Chowdhury

New Delhi: This is another Atmanirbhar Bharat moment. An order for two regiments of the new indigenous Arjun 1A tank for the Indian Army is on the anvil. The two regiments, comprising 118 tanks, have been developed by the Defence Research and Development Organization (DRDO) and incorporates 71 improvements from the original version.

Main Battle Tank (MBT) Arjun. (Pic Credit - DRDO)

They are expected to go through the usual route for clearance: The Defence Acquisition Council and the Cabinet Committee on Security. This deal is worth Rs 8,956 crore, not just for the tanks but also, spares and servicing.

The Army already has to regiments of the earlier version of the Arjun. While the T-90, a Russian designed armoured vehicle, is the Army's MBT or main battle tank, the Arjun is being considered suitable for use, particularly in the southern Rajasthan area, in the Thar Desert. Tank movement in the Punjab and northern Rajasthan is now more difficult because of urban settlements, canals and the increase in vegetation.

Anti-tank weapons

Five indigenous anti-tank weapons are in the final stages of development, top government sources said. They include the Nag anti-tank guided missile, its standalone version called SANT, the HELINA or the one delivered from helicopters. There will also be an MPATGM or the man-portable version as well as using the Arjun gun barrel.

https://www.timesnownews.com/india/article/historic-defence-order-of-118-indigenous-arjun-1a-tanks-on-the-anvil/715883

नवभारत टाइम्स

Mon, 08 Feb 2021

नेवी के लिए बन रहा है डबल इंजन एयरक्राफ्ट, मिग-29K की लेगा जगह

एरोनॉटिकल डिवेलपमेंट एजेंसी भारतीय नौसेना के लिए नए मीडियम कॉम्बेट एयरक्राफ्ट पर काम कर रही है। ये एयरक्राफ्ट मिग-29K की जगह लेगा। 4-5 साल में इसका प्रोटोटाइप तैयार होने की उम्मीद है।

पूनम पाण्डे

हाइलाइट्स:

- ***नेवी के लिए तैयार हो रहा डबल इंजन का एयरक्राफ्ट***
- ***अनमैन्ड एयरक्राफ्ट के लिए भी नेवी हेडक्वॉर्टर ने पूछा***
- ***एरोनॉटिकल डिवेलपमेंट एजेंसी मीडियम कॉम्बेट एयरक्राफ्ट पर कर रही काम***

नई दिल्ली: इंडियन नेवी की जरूरत के मुताबिक डबल इंजन का कॉम्बेट एयरक्राफ्ट तैयार करने के लिए एरोनॉटिकल डिवेपलमेंट एजेंसी काम कर रही है। रक्षा मंत्रालय के तहत आने वाली यह एजेंसी 5 साल के भीतर इस एयरक्राफ्ट का पहला प्रोटोटाइप जारी कर देगी। इन एयरक्राफ्ट से इंडियन नेवी मिग-29K को रिप्लेस कर सकेगी। नेवी हेडक्वॉर्टर ने एरोनॉटिकल डिवेलपमेंट एजेंसी से यह भी जानकारी ली है कि क्या वह नेवी के लिए अनमैन्ड कॉम्बेट एयरक्राफ्ट डिवेलप कर सकते हैं।

सांकेतिक तस्वीर

एरोनॉटिकल डिवेलपमेंट एजेंसी में एलसीए नेवी मार्क-1 के प्रोजेक्ट डायरेक्टर पी. थंगवेल ने बताया कि एलसीए (लाइट कॉम्बेट एयरक्राफ्ट) नेवी की सफल टेस्टिंग हो गई है और पिछले साल इसे आईएनएस विक्रमादित्य में लैंड भी कराया गया। उन्होंने कहा कि इंडियन नेवी की जरूरत ट्विन इंजन (दो इंजन वाला) एयरक्राफ्ट की है। नेवी अडवांस मीडियम कॉम्बेट एयरक्राफ्ट चाहती है। हम पिछले छह महीने से इस पर काम कर रहे हैं। यह मीडियम वेट का होगा।

थंगवेल ने कहा कि यह बड़ा एयरक्राफ्ट होगा इसलिए इसमें विंग फोल्डिंग कपैसिटी होगी ताकि मैंटेनेंस या स्टोरेज के लिए हैंगर में ले जाया जा सके। इसका डिजाइन इस तरह होगा कि यह आईएनएस विक्रमादित्य और स्वदेशी एयरक्राफ्ट कैरियर से ऑपरेट कर सकेगा। इसके विंग्स बिना फोल्ड के 11.2 मीटर के होंगे और फोल्ड होने पर 7.6 मीटर के होंगे।

उन्होंने बताया कि 4-5 साल में इसका पहला प्रोटोटाइप रिलीज कर दिया जाएगा। इंडियन नेवी इससे अपने मिग-29K को रिप्लेस कर सकेगी। इंडियन नेवी भी इस डिवेलपमेंट प्रोग्राम का हिस्सा है। नेवी इसमें फंडिंग भी कर रही है साथ ही उनके एक्सपर्ट भी डिजाइन स्टेज में मिलकर काम करेंगे। एलसीए नेवी मार्क-1 को इंडियन नेवी मिग-29 पायलट की ट्रेनिंग के लिए इस्तेमाल कर रही है।

पी. थंगवेल ने आगे कहा, 'एलसीए नेवी मार्क-1 को लेकर यूएस नेवी ने भी रुचि दिखाई है। वह अपने पायलटों की ट्रेनिंग के लिए इनका इस्तेमाल करना चाहती है। यूएस नेवी को 43 ट्रेनर एयरक्राफ्ट चाहिए। हमने इसका आरएफआई भेजा है। करीब तीन महीने पहले हमें नेवी हेडक्वॉर्टर से कम्युनिकेशन मिला कि क्या मार्क-1 एयरक्राफ्ट को अनमैन्ड एरियल कॉम्बेट वीइकल के तौर पर कंवर्ट कर सकते हैं?'

उन्होंने कहा कि इसके लिए कुछ टेक्नॉलजी चाहिए। मार्क-1 हाई स्पीड लैंडिग कर सकता है तो ऐसा हम यूएवी (अनमैन्ड एरियल वीइकल) में भी तैयार कर सकते हैं। हैंड फ्री टेकऑफ हम आराम से कर सकते हैं। अनमैन्ड के लिए ऑटोनोमस लैंडिंग की जरूरत है इसमें हमने कई अहम पड़ाव हासिल किए हैं। हमारे पास क्षमता है और हम इसे अचीव कर लेंगे। उन्होंने कहा कि ऑटोमेटिक टेक ऑफ एंड लैंडिग की बेसिक रिक्वायरमेंट आ रही है। एक बार हम इसमें एक्सपर्ट हो जाएंगे तो फिर बाकी सारी चीजें हैंडल हो जाएंगी। हम इस दिशा में काम कर रहे हैं।

https://navbharattimes.indiatimes.com/india/aeronautical-development-agency-is-working-on-a-new-double-engine-aircraft-for-indian-navy/articleshow/80735272.cms

THE HINDU

Sun, 07 Feb 2021

BDL launches new products at Aero India-2021

Model of new products presented to Defence Minister

Hyderabad: Adding to its wide range of product line, Bharat Dynamics Limited (BDL) has launched two new products during Aero India- 2021 - the "Dishani" and "Garudastra".

Commodore Siddharth Mishra (Retd), CMD, BDL presented a model of the new products to Defence Minister Rajnath Singh during a ceremony held as a part of Aero India - 2021 in Bengaluru on Saturday in the presence of Chief of Integrated Defence Staff, Chief of the Indian Army and Navy, Secretary (Defence Production), Ministry of Defence, Secretary Department of Defence R &D and Chairman, DRDO, Air Officer Maintenance and other dignitaries.

Garudastra is an advanced anti-submarine self-guided state of the art homing torpedo being designed and developed by NSTL, DRDO with BDL as the development partner.

Dishani, an expendable air-deployed ASW sonobuoy system being designed and developed by NPOL, DRDO. BDL is the development partner for Dishani.

BDL has entered into Memorandum of Understanding (MoU) / agreements during Aero India - 2021 with foreign and Indian firms namely Naval Group, L&T MBDA Missile Systems Ltd, a Joint Venture between L&T and MBDA, Rafael Advanced Defence System Ltd (Naval Division), Thales, UK, Roxel, France, STE "SPETSTECHNOEXPORT", Ukraine, EMCO, Bulgaria, Bharat Forge Limited, Dhruva Space Pvt Ltd., Skyroot Aerospace Pvt Ltd., Analinear Design

Technologies Pvt Ltd., Tonbo Imaging Indian Pvt Ltd. & Binford Research Labs Pvt Ltd.

CMD, BDL, Commodore Siddharth Mishra, (Retd) stated "BDL, as a part of its Global Outreach, is endeavouring to forge alliance with foreign companies. In addition to forging alliance with domestic Companies, BDL is also encouraging start-up companies to participate in its innovation programmes which would synergize their innovative ideas with BDL's capabilities, infrastructure and long and rich experience in the field of manufacturing and develop new products for the Armed Forces utilizing emerging technologies."

https://www.thehindu.com/news/cities/Hyderabad/bdl-launches-new-products-at-aero-india-2021/article33770509.ece

The Indian EXPRESS

Mon, 08 Feb 2021

DIAT to research, develop robotics platforms for armed forces

The institute launched the School of Robotics last year, considering interdisciplinary requirements of research and development in the field

Pune: The school of Robotics at the Defence Institute of Advanced Technology (DIAT), started in 2020, is set to enter into various interdisciplinary areas of research and development needed for the armed forces and allied defence establishments, the institute said.

DIAT, based at Girinagar in Pune, is an establishment of the Defence Research and Development Organisation (DRDO) under purview of the Ministry of Defence. In mid 2020, the mechanical engineering department of the institute, which was running courses in robotics for past several years, launched the School of Robotics, considering the interdisciplinary requirements of research and development in the field.

The school is involved in carrying out research in areas like humanoids, mobile and aerial robotics, motion planning of robots, intelligent robotics, medical robotics, machine learning and artificial intelligence in robotics, robot dynamics and control and swarm robotics. The school offers MTech, MS research and PhD programs in the discipline.

DIAT scientists said robots find a wide range of applications for the military, especially in modern warfare. (Source: Defence Institute of Advanced Technology)

DIAT scientists said robots find a wide range of applications for the military, especially in modern warfare. Its significance lies in operations in hazardous environments, inspection and detection of explosives, mine removal, surveillance and airline attacks. Besides, underwater unmanned vehicles are key to study the oceans and naval surveillance.

A press statement from DIAT said: "The school is planning to expand its facility by proposing aerial robotics and advanced robotics and systems laboratories. Proposed labs will be equipped with advanced work stations installed with high-end software and simulators, along with a required amount of actuators, sensors and various test beds, motion-tracking set up for algorithm testing and manipulator arms compatible with different softwares and controllers. Swarm robotics applications are also part of these lab facilities."

The scientists said the School of Robotics has collaborated with various research and development labs of DRDO, defence public sector undertakings, institutes and industries across India to provide an opportunity for students to carry out their research projects.

Some of the present collaborators are Combat Vehicle Research and Development Establishment, Centre for Artificial Intelligence and Robotics, Aeronautical Development Establishment, Defence Bio-engineering and Electro-medical Laboratory Research and Development Establishment (Engineers), Bharat Electronics Ltd, National Aerospace Laboratories, Indian Space Research Organisation, Vikram Sarabhai Space Centre, TCS Pune and IIIT Hyderabad.

https://indianexpress.com/article/cities/pune/diat-to-research-develop-robotics-platforms-for-armed-forces-7178681/

THE WEEK

Mon, 08 Feb 2021

Uttarakhand floods: Glacier bursts in winter 'next to impossible' say defence scientists

Sabotage cannot be ruled out; DRDO team to study site

By Pradip R Sagar

A team of DRDO'S Defence Geoinformatics Research Establishment (DGRE) is heading for Joshimath to study the exact cause of the glacier burst that triggered flash floods in Uttarakhand on Sunday.

The floods, which took place after a portion of the Nanda Devi glacier broke off in the Tapovan area, near the Indo-China border, have left up to 150 feared dead and damaged multiple locations including a hydropower plant in the region. Rescue efforts are underway as many are feared trapped under the Tapovan tunnel.

Chamoli: Damaged Dhauliganga hydropower project at Reni village, after a glacier broke off in Joshimath causing a massive flood in the Dhauli Ganga river, in Chamoli district of Uttarakhand, Sunday, Feb. 7, 2021 | PTI

But, scientists monitoring glaciers and avalanches in the region are surprised as they say glacier bursts do not take place in winters.

Defence scientists say that a glacial lake outburst flood (GLOF), a type of outburst flood that occurs when the dam containing a glacial lake fails, is a near impossibility under present climatic conditions: The area is surrounded by snow-capped mountains with temperatures of minus 20 degrees Celsius.

"During winters, glaciers are formed as snow doesn't melt due to the negative temperature. To my understanding, glacier burst in this season is next to impossible. I haven't studied such an incident in the last 50 years," said a defence scientist, who added that exact cause can be established after studying satellite images from yesterday and tomorrow.

Without ruling out the possibility of sabotage, defence scientists indicate that several militaries in the world use mountain resources as a weapon to hit enemy territory.

The Rishiganga hydropower project near Raini village in Uttarakhand was damaged, as was NTPC’s under-construction project on the river Dhauli Ganga near Tapovan, according to an official.

And, it could an attempt to hit the key power project—as a blast in the glacier can be triggered from a distance as well.

DRDO'S Chandigarh based Snow and Avalanche Study Establishment (SASE) works in avalanche forecasting, artificial triggering and structural control in snowbound mountainous regions. After the recent restructuring of DRDO, it was merged with the Defence Terrain Research Laboratory in and is now called the Defence Geoinformatics Research Establishment.

A DGRE team will be moved to the accident side by IAF helicopters to study the event.

https://www.theweek.in/news/india/2021/02/07/uttarakhand-floods-glacier-bursts-in-winter-next-to-impossible-say-drdo-scientists.html

THE FREE PRESS JOURNAL SINCE 1928

Mon, 08 Feb 2021

Uttarakhand glacier burst: No danger of downstream flooding, DRDO team deployed for surveillance

All-out efforts are being made to ensure that all missing people are traced and accounted for

A 13.2 MW small hydro project on the Rishiganga river was swept away in the glacier burst in Uttarakhand on Sunday, but there is no danger of floods in the downstream areas as the water level has been contained.

Locals inspect the site near damaged Dhauliganga hydropower project at Reni village, after a glacier broke off in Joshimath causing a massive flood in the Dhauli Ganga river, in Chamoli district of Uttarakhand, Sunday, Feb. 7, 2021.PTI

This was conveyed to the National Crisis Management Committee (NCMC), headed by Cabinet Secretary Rajiv Gauba, at an emergency meeting held here on Sunday evening.

The NCMC was also informed that people trapped in a hydro project tunnel were rescued by the Indo Tibetan Border Police (ITBP), while efforts are on to rescue those trapped in another tunnel. The operation is being coordinated by the Army and the ITBP, an official spokesperson said.

All-out efforts are being made to ensure that all missing people are traced and accounted for.

The glacier burst led to a rise in water levels in the river Rishiganga, which washed away the Rishiganga small hydro project of 13.2 MW.

The flash flood also affected the downstream hydro project of NTPC at Tapovan on the river Dhauli Ganga, which is a tributary of the river Alaknanda, the spokesperson said.

However, there is no danger of downstream flooding, and the rise in water level has been contained, as per the information given by the Central Water Commission (CWC).

There is also no threat to the neighbouring villages.

At the same time, the agencies concerned of the central and the state governments were asked to keep a strict vigil on the situation, and a team from the DRDO, which monitors avalanches, is being flown in for surveillance and reconnaissance.

The Managing Director of the NTPC has been asked to reach the affected site immediately.

Two teams of the NDRF have been sent and three additional teams have been flown in from Hindon airport in Ghaziabad. The troops will reach the affected region tonight.

More than 200 ITBP personnel are on the spot, and one column of the Engineering Task Force (ETF) of the Army, with all rescue equipment, has been deployed.

The Indian Navy divers are being flown in and aircraft and helicopters of the Indian Air Force (IAF) are on standby, the spokesperson said.

https://www.freepressjournal.in/india/uttarakhand-glacier-burst-no-danger-of-downstream-flooding-drdo-team-deployed-for-surveillance

abp LIVE

Mon, 08 Feb 2021

Uttarakhand Glacier Collapse: तबाही वाली जगह पर DRDO की एक्सपर्ट टीम पहुंचेगी, हालात के लेगी जायजा

उत्तराखंड में कुदरत के कहर के बाद हालात का जायजा लेने के लिये केंद्रीय एजेंसी भी सक्रिय हो गई हैं। अब डीआरडीओ के एवलांच एक्सपर्ट टीम आपदा वाली जगह का निरीक्षण करने जाएगी।

नई दिल्ली: उत्तराखंड के चमोली में ग्लेशियर फटने से तबाही के बाद लगातार रेस्क्यू ऑपरेशन चलाया जा रहा है। इस बीच केंद्रीय एजेंसी डिफेंस रिसर्च डेवलेपमेंट ऑर्गेनाइजेशन (DRDO) की एक विशेषज्ञ टीम कल तबाही वाली जगह पर पहुंचेगी और पूरी स्थिति का जायजा लेगी। ये टीम बर्फीले तूफान से जुड़ी रिसर्च में एक्सपर्ट मानी जाती है। बता दें कि, यहां ग्लेशियर फटने से 10 लोगों की मौत हो गई है, वहीं, सैकड़ों लोग लापता हैं।

कई लोग लापता हैं

वहीं, चमोली में आए तूफान के बाद फंसे लोगों को निकालने का अभियान चलाया जा रहा है। जानकारी के मुताबिक, ऋषिगंगा रैणी गांव के दो भाग हैं। एक ऋषि गंगा के दाएं भाग में और एक बाएं भाग में है। एक सड़क पर है और एक सड़क से ऊपर है। वहीं, पर ऋषि गंगा पावर प्रोजेक्ट था जो 13 मेगावाट से थोड़ा ज्यादा का प्रोजेक्ट था। 2020 में ही कमीशंड हुआ था। करीब 35 लोग काम करते थे। यहां चार पुलिसवालों की ड्यूटी थी, जिनमें दो ने छुट्टी ली थी। दो पुलिसवाले लापता हैं। यहां काम करने वाले 29-30 के करीब जो ऋषि गंगा प्रोजेक्ट में काम करते थे, वे सभी मीसिंग हैं।

176 लोग ड्यूटी पर निकले थे

उसी से लगभग 5 किलोमीटर डाउन स्ट्रीम में तपोवन में एनटीपीसी का निर्माणाधीन प्रोजेक्ट था और इसमें काफी संख्या में मजदूर काम कर रहे थे। मोटी मोटी जानकारी के मुताबिक, 176 मजदूर अपनी ड्यूटी के लिए निकले थे। वहां, पर दो टनल हैं, एक टनल में 15 लोग थे और दूसरी टनल में अनुमान है कि 30-35 लोग संभावित हैं। जब ये एवलांच आया तब 35-40 लोग वापस आ गए, उन्हें रेस्क्यू कर लिया गया। एक मामूली रूप से घायल है, लेकिन कोई खतरे की बात नहीं है।

मुख्यमंत्री के मुताबिक, एरियल सर्वे किया गया है। रोड से रैणी गांव तक गए, साइट पर जाकर जायजा लिया है। रैणी गांव के पास मोटरेबल पुल और चार अन्य छोटे पुल (झूला पुल) क्षतिग्रस्त होने से ऋषि गंगा का दाहिना हिस्सा है और धौली गंगा का जो एरिया है, इनका संपर्क टूट गया है। वहां 17 गांव हैं, इनमें से 7 गांव सर्दी के समय माइग्रेट कर जाते हैं, गोपेश्वर और चमोली के आसपास। 11 गांव के लोग वहां पर हैं। उन्हें किसी तरह की आवश्यक चीजों की कमी न हो उसके लिए आर्मी और वायुसेना के हेलीकॉप्टर पहुंच चुके हैं। राज्य सरकार की तरफ से हेलीकॉप्टर भी तैनात हैं।

https://www.abplive.com/states/up-uk/drdo-team-visit-the-incident-site-at-uttarakhand-1760985

The Sentinel
of this land, for its people

Sun, 07 Feb 2021

One-day skill development programme held on oyster mushroom production in Tezpur

A one-day skill development programme on 'Oyster Mushroom Production' was conducted by Mushroom Task Group of Defence Research Laboratory, DRDO, Tezpur at 17 Maratha Light Infantry recently

Tezpur: A one-day skill development programme on 'Oyster Mushroom Production' was conducted by Mushroom Task Group of Defence Research Laboratory, DRDO, Tezpur at 17 Maratha Light Infantry recently.

The DRL team led by Vijay Pal, Technical Officer 'A', Nipu Jyoti Kalita, Tech 'C' and Balaram Das, ALS – I. A total of 33 Army personnel (JCOs and ORs) attended the training programme. In the first session, they were informed in detail about the nutritional benefits of mushrooms, their economic importance as an alternative source of income and stepwise cultivation methodology of mushroom. In the second session, the participants prepared mushroom bags themselves under the supervision of DRL team as a part of practical demonstration and execution. A total of 60 mushroom bags, each of 2.5 kg weight were prepared by army personnel. The participants were thoroughly explained about the micro points to be remembered during mushroom bag preparation, incubation and harvesting. Kit and mushroom technology calendar were distributed to each participant, stated a release.

https://www.sentinelassam.com/north-east-india-news/assam-news/one-day-skill-development-programme-held-on-oyster-mushroom-production-in-tezpur-523713?infinitescroll=1

THE FREE PRESS JOURNAL SINCE 1928

Sat, 06 Feb 2021

Country's first in Odisha's Balasore: Thunderstorm research testbed

Bhubaneswar: Odisha's Balasore will get the country's first thunderstorm research testbed, the India Meteorological Department (IMD) has said.

The objective of setting up the thunderstorm testbed is to minimalise human fatalities and loss of property due to lightning strikes.

IMD Director-General Dr Mrutyunjay Mohapatra, speaking with a private television channel, revealed a first-of-its-kind monsoon testbed is also being planned near Bhopal. Both the projects are in the planning stage and detailed project reports are being made.

He said the thunderstorm testbed will be established in a collaboration between the Ministry of Earth Sciences, IMD, Defence Research and Development Organisation and Indian Space Research Organisation. "The IMD, ISRO and DRDO already have their units in Balasore.

Observatories will be set up to cater to nearby areas and studies on thunderstorms will be conducted on the testbed," he said. Balasore's Chandipur has the Integrated Test Range for launching missiles.

"The testbed will have several observational networks, a full-fledged observatory, radar, auto-station, microwave radiometer and a wind profiler," Mohapatra told over the phone. "A meteorological research testbed is akin to what a missile test-range is for testing missiles," he said. Mohapatra, often referred to as the 'Cyclone Man of India' for his accurate prediction of cyclones in the Indian subcontinent, pointed out many lives are lost in Odisha, West Bengal, Bihar and Jharkhand due to lightning strikes every year between April and June.

https://www.freepressjournal.in/india/countrys-first-in-odishas-balasore-thunderstorm-research-testbed

THE NEW INDIAN EXPRESS

Sat, 06 Feb 2021

Balasore to get India's first lightning research unit

The IMD, Ministry of Earth Sciences, Indian Space Research Organisation (ISRO) and Defence Research and Development Organisation (DRDO) are jointly working on the project.

Bhubaneswar: The India Meteorological Department (IMD) is all set to establish the country's first thunderstorm research testbed at Balasore.Expected to be fully operational in next five years, the facility will aim to reduce fatalities and loss of property due to lightning strikes in Odisha and the eastern states.

DRDO Chandipur, ISRO Balasore and Bhubaneswar met office will jointly implement the project. The new facility will be developed at IMD's observation centre in Balasore, Director General of Meteorology Dr Mrutyunjay Mohapatra told TNIE.Between 2011 and February 2020, about 3,218 people lost their lives in the State in lightning strikes. The IMD, Ministry of Earth Sciences, Indian Space Research Organisation (ISRO) and Defence Research and Development Organisation (DRDO) are jointly working on the project.

"The project is in the preliminary stage and once finalised, the research unit will be equipped with augmented observational systems like radar, wind profiler, microwave radiometer and automatic weather stations to study Nor'wester thunderstorms in Odisha, West Bengal, Jharkhand and Bihar," Mohapatra said.According to IMD, current observation methods to study the characteristics of a thunderstorm, its growth, movement and the conditions leading to decaying of the storm is not adequate and need to be enhanced.

Advanced observational systems will also be installed in north Odisha, West Bengal and Jharkhand. Top academic institutes like IIT Bhubaneswar, IIT Kharagpur, Fakir Mohan University, NIT Rourkela, Maharaja Sriram Chandra Bhanja Deo University at Baripada, University of Calcutta and Birla Institute of Technology, Ranchi will be involved to conduct research on the data which will be shared to them by the testbed.

https://www.newindianexpress.com/states/odisha/2021/feb/06/balasore-to-get-indias-first-lightning-research-unit-2260346.html

AL-MONITOR
THE PULSE OF THE MIDDLE EAST

Thu, 04 Feb 2021

Egypt considers purchase of Indian missile system

India may supply Egypt with its BrahMos missile systems as part of New Delhi's efforts to emerge as a major arms exporter and Cairo's push to diversify its weaponry

India is drawing up a list of countries that it could potentially supply with modern missile systems as part of New Delhi's bid to emerge as a major arms exporter, according to Indian press reports. The list includes Egypt.

On Jan. 7, the Times of India reported that New Delhi had made a list of friendly countries to which it could sell advanced Akash missile systems and BrahMos cruise missiles over the next few years.

Indian weapons researcher Amiet R. Kashyap told Al-Monitor that Egypt along with the Philippines, South Korea, Algeria, Greece, Malaysia, Thailand, Singapore, Venezuela, and Bulgaria are interested in the missile systems.

Visitors look at a display of India's Defense Research and Development Organization's BrahMos missile at the DefExpo 2018, a large defense exhibition showcasing military equipment on the outskirts of Chennai on April 11, 2018. Photo by ARUN SANKAR/AFP via Getty Images.

Egypt has shown interest in BrahMos, a cruise missile developed by India and Russia. According to the Indian defense and space news site Livefist, an Egyptian delegation had visited the BrahMos pavilion at DefExpo India in Chennai back in 2018. Egypt's interest in this type of missile first emerged in 2016, according to the Indian Financial Express.

The Egyptian delegation, which included former Minister of State for Military Production Maj. Gen. Mohammed al-Assar and chief of the Armament Authority of the Egyptian Armed Forces Maj. Gen. Tareq Saad Zaghloul, met with Sudhir Kumar Mishra, the CEO of BrahMos Aerospace.

The BrahMos, which has a range of 290 kilometers (180 miles) and a speed of Mach 2.8, is a medium-range cruise missile that can be launched from a submarine, ship, aircraft or land at altitudes from 10 to 15,000 meters (33 to 50,000 feet), and can carry warheads of up to 300 kilograms (660 pounds).

BrahMos is a product of BrahMos Aerospace, a joint venture between Russia's Federal State Unitary Enterprise NPO Mashinostroyenia and the Indian Ministry of Defense's Defense Research Development Organization.

Kashyap noted that BrahMos Aerospace's Indian and Russian teams have discussed potentially exporting these systems to some mutually agreed upon countries.

Under the Inter-Governmental Agreement signed in 1998 between India and Russia, questions of exporting to a third country are to be decided jointly by the two countries.

Meanwhile, Egypt has been building up ties with both India and Russia.

Speaking about Egypt possibly acquiring the BrahMos systems, Kashyap said, "Maybe AERO India 2021, Asia's largest aerospace exhibition [Feb. 3-5], will reveal something on that." Egypt has not yet announced that any of its officials will be attending the exhibition.

"The Russian government, in 2018-2019, allowed BrahMos to export to a third country. The Indian Ministry of Defense also granted [BrahMos] permission to export some key [missile] systems. India is aiming to achieve a target of exporting defense equipment worth $5 billion by 2025, and systems like the BrahMos will play a role," Kashyap added.

Each BrahMos unit costs some $2.75 million.

Neither the Egyptian military nor BrahMos Aerospace responded to requests for comment. However, retired Egyptian Maj. Gen. Adel al-Omda, an adviser to the Nasser Higher Military Academy and a member of the Egyptian Council for Foreign Affairs, told Al-Monitor that Egypt seeks to diversify its weapons sources.

Omda added that diversifying its weapons sources will shield Egypt from outside influence over its political decisions.

International human rights organizations are pressing the administration of US President Joe Biden to stop arms deals with Egypt. The United States has provided annual military aid worth $1.3 billion in the form of arms deals to Egypt since the Camp David Peace Agreement between Egypt and Israel was signed in 1978.

Omda pointed out, "Egypt is a sovereign state. Until it possesses advanced weapons and from various sources, it will not have the freedom to make political decisions based on parity, not subordination."

Since President Abdel Fattah al-Sisi rose to power in 2014, Egypt has focused on doubling its arms deals with several countries, most notably Russia, France, Germany and Italy.

Egypt's arms imports tripled from 2010 to 2014 and 2015 to 2019, making it the world's third largest arms importer, according to a report by the Stockholm International Peace Research Institute in March 2020.

Omda noted that Egypt faces challenges that require increasing its military capacity, notably in the Suez Canal, the energy-rich eastern Mediterranean and politically unstable Libya.

https://www.al-monitor.com/pulse/originals/2021/02/egypt-india-russia-made-brahmos-missile-system-weapons.html

Hindustan Times

Sat, 06 Feb 2021

President Kovind expresses joy over HAL's contract to manufacture Tejas aircraft

President Kovind was addressing the valedictory ceremony of the Aero India 2021 in Bengaluru and congratulated the organisers saying that the event was successful amid the difficulties presented by the Covid-19 pandemic

Edited by Shankhyaneel Sarkar

New Delhi: The President of India Ram Nath Kovind expressed his joy at the news of the Indian Air Force ordering 83 Tejas aircrafts from Hindustan Aeronautics Limited (HAL) worth ₹48,000 crore on Friday.

President Kovind was addressing the valedictory ceremony of the Aero India 2021 in Bengaluru and congratulated the organisers saying that the event was successful amid the difficulties presented by the Covid-19 pandemic.

President Kovind said, "I am happy to note that Hindustan Aeronautics Limited has got the orders for 83 Tejas aircrafts from Indian Air Force valued at more than Rs. 48,000 crore."

President Ram Nath Kovind's address to the joint sitting of both Houses of Parliament on Friday met with a boycott of 18 Opposition parties who supported the farmer's cause.pti (MINT_PRINT)

Earlier on February 3, the Defence Ministry handed over a contract to manufacture 83 Light Combat Aircraft (LCA) Tejas fighters to the Hindustan Aeronautics Limited (HAL) at the Aero India international air show.

Defence minister Rajnath Singh, Indian Air Force chief RKS Bhadauria and Defence Research & Development Organisation (DRDO) Chief G Satheesh Reddy have hailed the government for handing over the contract to manufacture 83 Light Combat Aircraft (LCA) Tejas Mark-1A fighters to the Hindustan Aeronautics Limited (HAL) saying that it will help the nation attain self-reliance in manufacturing of defence equipment and weaponry.

President Kovind also said that the Aero-India event was one of the largest events which was held in a hybrid manner despite challenges presented by the ongoing pandemic. “Aero India2021 has been an unprecedented success. I have been told that high-level delegations from 43 countries and exhibitors from 530 companies participated, many more across the world were associated virtually. It is the world’s first mega event of this kind to be held in hybrid format.”

He further added, “Past year has been a time of unprecedented hardships due to Covid-19. Its adverse impacts have been felt in all walks of life globally. Despite the challenges posed by the pandemic, I'm happy that Aero India 2021 has been organised successfully.”

https://www.hindustantimes.com/india-news/prez-kovind-expresses-joy-over-hal-s-contract-to-manufacture-83-tejas-aircrafts-101612524805588.html

Hindustan Times

Sun, 07 Feb 2021

HT Interview: IAF Chief RKS Bhadauria says indigenisation key to military might

On row with China, the IAF chief RKS Bhadauria says: "If we have to be a strong military power, it has to be on indigenous defence capability. And that is our focus."

By Rahul Singh

Bengaluru: Bengaluru From plans to deploy a locally produced stealth fighter to the focus on indigenisation and the current situation in the Ladakh sector, IAF chief Air Chief Marshal RKS Bhadauria spoke to Rahul Singh on a wide range of issues on the sidelines of Aero India-2021.

Edited excerpts:

Air Force Chief Air Chief Marshal RKS Bhadauria speaks to media on the sidelines of Aero India 2021, in Bengaluru on Thursday. (ANI Photo)

What is the status of India’s fifth-generation fighter programme -- the advanced medium combat aircraft (AMCA)?

I am hopeful that the government approval for the project will come this financial year. I must tell you that the Defence Research and Development Organisation (DRDO) has set a very aggressive timeline for the AMCA. They are looking at a timeline of 2027 to 2030 to put the stealth fighter into production. If that materialises, the fighter should be operationally available to IAF as a squadron by 2032.

Will the AMCA have some sixth-generation technologies (more advanced than those in any fighter jet currently in service globally)?

A lot of sixth-generation technologies are already being talked about. It is possible for us to look at some of those technologies for the AMCA. While the platform will have fifth-generation stealth design features, a lot more can happen with the sensors, weapons, overall reach, and the aircraft’s capability. There is a possibility of equipping it with directed energy weapons, superior anti-missile systems, advanced missile approach warning systems, and teaming it with unmanned systems. These are some of the areas that will get looked into. It’s critical we start working on those sixth-generation technologies and bring them into the AMCA wherever we are successful. There’s no looking back on the AMCA.

What are your thoughts on the ₹48,000-crore LCA-Mk1A project and its future?

It's an advanced indigenous aircraft, and it's a matter of pride for us to fly our own aircraft. We have graduated from the basic LCA to a much higher level now. In placing the order for the LCA Mk-1A, we have looked at what our requirements will be over the next decade. It will have superior weapons, radar, fully integrated electronic warfare systems and a level of sensor fusion that is going to be relevant in the next decade. The LCA Mk-1A brings a lot to the table in terms of capability. It's no longer just an indigenous project that we must support but it's something that will give IAF a strong capability enhancement.

What do you think of LCA Mk-1A's export potential?

Quality, cost competitiveness and timely deliveries are important factors for the aircraft's export potential to finally materialise. These are issues that the industry must take care of as we expand further. Orders will come and we will have to demonstrate that the Indian industry will supply the right stuff in good time and also be cost competitive.

The last of the 83 LCA Mk-1A's ordered will be inducted into the IAF in 2030. Any concerns about technology getting outdated?

Some of those aspects were factored when the order was placed in terms of the level of IAF's specifications. So it will not get outdated, but in another 10 years there will surely be better sensors and weapons around. But the best part of having indigenous technology is that whatever upgrades take place in sensors, weapons, electronics and avionics hereafter, we will be able to integrate them into the aircraft as we have the intellectual property rights, the methodology, and the capability. Then we will also have the LCA Mk-2 that will be a further development of Mk-1A. It will fill the gap between Mk-1A and AMCA.

The border row with China saw India make some last-minute critical weapon imports. How do you see that in the context of the focus of indigenisation?

When you look at the long-term picture, indigenisation is the most important aspect we need to concentrate on. If we have to be a strong military power, it has to be on indigenous defence capability. And that is our focus.

What is the situation in the Ladakh sector?

China has continued to strengthen its defences during the last three to four months. They have been making efforts to strengthen their deployments and upgrade their infrastructure. There has been no change in our deployment, and we are very much there. If the talks go well and there is disengagement and de-escalation, then we will take a view on changing our deployments. Currently, our deployments match theirs. If status quo does not change, we will take action on the basis of the real situation on the ground.

Is the IAF happy with the budget given to it?

Despite the effect of the pandemic on the economy, we have got a good allocation under the capital head. Our capital budget is 20% more than last year's. It will help us to continue with our modernisation and also to look at building important combat capability in the near future.

https://www.hindustantimes.com/india-news/ht-interview-iaf-chief-rks-bhadauria-says-indigenisation-key-to-military-might-101612554840166.html

INDIA TODAY

Sat, 06 Feb 2021

Tejas gives combat edge over China-Pak JF-17, says Air Chief Marshal RKS Bhadauria

Air Chief Marshal RKS Bhadauria told India Today that the Light Combat Aircraft Tejas has a combat edge over the China-Pakistan JF 17. He also said China has been strengthening its military infrastructure amid the continuing tussle in Ladakh that started in May last year

By Abhishek Bhalla

Bengaluru: The Light Combat Aircraft Tejas has a combat edge over the China-Pakistan JF 17, Air Chief Marshal RKS Bhadauria told India Today. He also stated that China has been strengthening its military infrastructure amid the continuing tussle in Ladakh that started in May last year.

Air Chief Marshal RKS Bhadauria

"The Mark 1 A Tejas is far ahead of the JF 17. The upgraded version is much higher and has a combat edge over JF 17. In terms of weapons, sensors and who shoots first, the Tejas is much superior," he said speaking on the sidelines of the Aero India show in Bengaluru.

He said with 83 Tejas now ordered — 73 of which are the upgraded version of the earlier aircraft, the capabilities of the Indian Air Force will enhance and also help in increasing the squadron fleet.

We already have 40, with 83 more number will be 123 and this is a huge step. It is a good idea to order aircraft in large numbers is a good idea because only then the entire ecosystem in terms of fighter production really sets in. Rs. 48,000 crore going into the industry in the coming decade will be a game-changer."

The order for the new 83 LCA's should be met by 2030.

A deal was signed with Hindustan Aeronautics Limited (HAL) on February 3 during the Aero India show for the manufacturing of these fighter jets.

Talking about India enhancing its exports and Tejas being a potential export item, he said now is the time to get to the levels of competitors.

"If you get it right it should change our export scene," he said.

China enhancing military infra

To a question on recent aggressive activities by China in Ladakh and other sectors, the IAF Chief said there has been a lot of strengthening of infrastructure on their side. "In the last two months, there has been a status quo. A lot of operational infrastructure for storing weapons has come. Our deployment is based on ground realities."

When asked if Indian Air Force was anytime close to carrying out any strikes the Air Force Chief said, "If things unfolded in a way that there was going to be a conflict we were prepared and still are."

Talking about IAF's expenditure shooting up way beyond its budget allocation he said some of these were initial payments towards capital expenditure and also emergency procurement that was made.

The armed forces spent Rs. 23,000 crore over and above the original budget allocation of 2020-21 mainly due to the tensions with Ladakh as India geared up for a long period of escalation.

The Indian Air Force's spent most over its original allocation overshooting its budget by Rs.11,773 crore and the navy spent Rs 10,854 crore more. In comparison the army spent Rs. 821 crore above its allocation.

https://www.indiatoday.in/india/story/tejas-gives-combat-edge-over-china-pak-jf-17-says-air-chief-marshal-rks-bhadauria-1766207-2021-02-05

ThePrint

Fri, 05 Feb 2021

India looking at Tejas exports at Rs 309 crore per aircraft, HAL Chairman says

R. Madhavan, chairman of Hindustan Aeronautics Limited, says countries from Southeast Asia and the Middle East have shown interest in Tejas fighters

By Snehesh Alex Philip

Bengaluru: India is actively scouting for export potential for the indigenous Light Combat Aircraft (LCA) Tejas at a vanilla price of just Rs 309 crore per aircraft, as countries from Southeast Asia and the Middle East have evinced interest, R. Madhavan, chairman of Hindustan Aeronautics Limited (HAL), said at Aero India being held in Bengaluru.

Responding to a query from ThePrint on the export potential and the costing, Madhavan said while the contract cost for the 83 Tejas fighters is about Rs 48,000 crore, it will come down to around Rs 36,000 crore if one takes away the tax component and escalation in foreign exchange.

R. Madhavan, chairman of Hindustan Aeronautics Limited, in Bengaluru on 4 February 2021 | ANI Twitter

"Some are calculating the price of the Tejas MK1 A based on the Rs 48,000 (crore) bill. This is wrong. If one takes out the taxes and duty, besides foreign exchange increase, the cost of the contract comes down to about Rs 36,000 core. Actually, the total order cost for the 83 LCA is about Rs 25,150 crore," he said.

Explaining the break-up, Madhavan said the taxes and customs work out to be around Rs 9,200 crore, and another Rs 11,000 crore is for spares, ground equipment, training aides and manuals, among others.

"Cost per aircraft is Rs 309 crore. The trainer will cost Rs 280 crore. This is a very competitive price. Other countries have found this cost and have realised that it is the cheapest offer for a four-and-a-half generation aircraft," he said.

"This (Rs 309 crore) is the cost at which we will be exporting. There would be a little bit of extra cost because the bases will be abroad," Madhavan added.

Tejas performance

The main challenger for the Tejas Mark 1A, in terms of exports, is the joint Sino-Pak product, JF-17.

Defence officials, however, argued that the Tejas has superior performance since it has a better engine, radar system and electronic warfare suit, besides an edge in weaponry like the Beyond Visual Range missiles.

Refusing to name countries that have shown interest, Madhavan said they are from Southeast Asia and the Middle East.

Sources in the defence establishment, however, said half a dozen countries, including Sri Lanka and Egypt, have evinced interest in the aircraft.

Export targets

Asked whether HAL has sought the government's waiver on high taxes to enable exports, a senior HAL official said: "Most of the tax are output tax, which will not be applicable on exports."

HAL is looking at setting up logistics facilities in Malaysia, Vietnam, Indonesia and Sri Lanka to woo the countries to buy Tejas and military helicopters.

This is because having logistics facilities is key to selling the products and ensuring after-sales services.

Prime Minister Narendra Modi had last year set a defence export target of $5 billion in the next five years.

https://theprint.in/defence/india-looking-at-tejas-exports-at-rs-309-crore-per-aircraft-hal-chairman-says/598642/

ThePrint

Fri, 05 Feb 2021

'We'll monitor HAL's delivery' — IAF appoints team to ensure mega Tejas order is on schedule

Defence officials also said the contract for 15 indigenous Light Combat Helicopter is set to be awarded by March this year

By Snehesh Alex Philip

Bengaluru: The Indian Air Force has appointed an integrated project monitoring team headed by its deputy chief to ensure that Hindustan Aeronautics Limited (HAL) sticks to the timelines for delivery of newly contracted Light Combat Aircraft (LCA) Tejas, a senior Defence Ministry official said at the Aero India show Thursday.

File photo of the Tejas aircraft used by IAF | Wikimedia Commons

A biannual review by all stakeholders has also been planned to undertake course corrections needed to enable HAL to deliver the rated production, the official said, as the IAF focuses on timely delivery of the 83 Tejas aircraft, a contract that was inked for Rs 48,000 crore Wednesday.

"Right from the contract signing, an integrated project monitoring team headed by the deputy chief of air staff will closely monitor the implementation of the contract. Biannual review by all stakeholders is planned to undertake course corrections needed to enable HAL to deliver the rated production," V.L. Kantha Rao, director general (acquisition) in the Defence Ministry said.

ThePrint had reported that the IAF was focusing on ensuring timely delivery of the aircraft as they are critical to the force.

The aircraft are meant to replace the ageing MiG 21 Bisons which will be phased out by 2025. The IAF is also keen that the timelines for Tejas Mk 2 and Advanced Medium Combat Aircraft (AMCA) are met.

According to the contract, the first Tejas Mk 1A is to be delivered within three years of signing the deal, by 3 February 2024. All the deliveries are to be completed over a period of nine years, including the three years prior to the delivery of the first aircraft.

To ensure that the aircraft are delivered on time, Defence Minister Rajnath Singh inaugurated a second assembly line for Tejas Tuesday, which will increase the production capacity to 16 aircraft per year from the present eight.

LCH contract to be signed by March

Rao also said that the contract for 15 indigenous Light Combat Helicopter (LCH) is set to be awarded by March this year.

"The procurement of 15 LCH is underway. The negotiations have been completed and the contract is expected to be concluded by March," he said.

The 15 LCH includes 10 for the IAF and five for the army. The IAF and the army together require about 160 LCHs, a source said. Incidentally, at least three twin-engine LCH have already been deployed in the Ladakh sector amid stand-off with China.

Rao also said that Acceptance of Necessity (AON) for HTT-40, a basic trainer aircraft manufactured by the HAL, has been accorded and a Request for Proposal (RFP) for 70 aircraft is almost ready to be released.

https://theprint.in/defence/well-monitor-hals-delivery-iaf-appoints-team-to-ensure-mega-tejas-order-is-on-schedule/598537/

THE ECONOMIC TIMES

Fri, 05 Feb 2021

Mega LCA order: Rs 9,000 crore worth orders to go to MSMEs, private partners

By Manu Pubby

Synopsis

The top executive said that there are likely to be close to 600 suppliers of all shapes and sizes for the LCA Mk 1A program by the end of this year as production in ramped up to meet the requirements of the air force. With the Rs 48,000 crore deal signed at the air show, HAL now has three years to deliver the first aircraft.

Bengaluru: Close to Rs 9,000 crore worth of orders are set to go to MSMEs and private sector partners as India starts producing its next generation Light Combat Aircraft after the air force signed an order for 83 fighter jets.

A file picture of LCA Tejas

India's premier aerospace company, Hindustan Aeronautics Limited NSE 0.70 % (HAL) has said that it plans to heavily involve the private sector, with five major tier one partners who will supply key components and parts of the fuselage and encouraging smaller players to shore up capability.

"At present, the indigenous content is above 52 percent, we will have to see how to increase the indigenous content. We want to improve to 65 percent provided that some of the vendors can come up and provide us finished units," HAL Chairman R Madhavan said at the AeroIndia show.

The top executive said that there are likely to be close to 600 suppliers of all shapes and sizes for the LCA Mk 1A program by the end of this year as production in ramped up to meet the requirements of the air force. With the Rs 48,000 crore deal signed at the air show, HAL now has three years to deliver the first aircraft and then ramp up production capability to 16 jets a year at twin production lines.

Madhavan said that additional lines can be easily set up to ramp up production further if the need arises, given potential export orders for the LCA Mk1A fighter. With India pitching the jet for exports in the neighbourhood, HAL believes that the LCA Mk1A has a good possibility for additional orders. "We hope we can conclude something very quickly. There has been a lot of interest, mostly from South East Asian nations for the Mk1A version," the chairman said.

Beyond the LCA, the state owned company is now looking at getting orders for its indigenous HTT 40 basic trainer, which is on offer to the armed forces for pilot training. The air force handed over a formal request for proposals to HAL at the aero show for the HTT 40, getting a step closer to inducting the aircraft.

HAL said that the plan is to start with 70 aircraft for the air force and navy, with the total number likely to go up to 106. The aircraft will initially be made in Bangalore but the main production line will come up in Nasik once the formal orders are placed.

https://economictimes.indiatimes.com/news/defence/mega-lca-order-rs-9000-crore-worth-orders-to-go-to-msmes-private-partners/articleshow/80683197.cms?from=mdr

Forbes

Sat, 06 Feb 2021

'India orders 83 improved Tejas fighter jets-more evolutions may follow

By Sebastien Roblin

At a ceremony at Yelahanka airbase in Bangalore this Wednesday, Indian aircraft manufacturer Hindustan Aerospace Limited (HAL) signed onto a $6.58 billion agreement to deliver 73 new Tejas Mark 1A Light Combat Aircraft jets and 10 Tejas Mark 1 two-seat training jets to the Indian Air Force.

Tejas Mark 1 multi-role fighter. Venkat Mangudi (CC BY-SA 2.0)

The order, which received preliminary approval from Prime Minister Modi's cabinet in January, actually falls a bit under the anticipated request for 83 Mark 1As and 18 trainers, perhaps due to financial exigencies imposed by the Covid-19 pandemic.

It supplements the initial order for 40 of the base Mark 1 model (including 8 trainers) roughly halfway through delivery to the Indian Air Force. One squadron, No. 45 Flying Daggers, currently operates the type. HAL has struggled to speed up annual deliveries of Tejas jets, but these are now are supposedly set to increase to 16 per year in 2021 due to outsourcing and the opening of a second production line.

The Mark 1A may reportedly make its first flight late 2022 or 2023, with final delivery expected by 2026.

In many way, India and HAL are counting on major improvements in the Mark 1A to validate India's ongoing investment in the Tejas. If successful, the improved model could pave the way for higher-capability evolutions of the Tejas airframe.

The single-engine multi-role Light Combat Aircraft began development by HAL and India's Aeronautical Development Agency in the 1980s as an eventual replacement for India's large fleet of MiG-21 jets acquired in the 1960s. Currently, 50% of Tejas components (set to increase to 65%) are indigenous; the jet incorporates an American F404 turbofan, Israeli radars and Russian weapon systems.

But given the Tejas' lengthy development cycle, the initial Tejas underwhelmed in performance to the extent that it was rejected for service with the Indian Navy. The IAF did chose to procure Tejas jets, but the service's auditor general criticized the design for failing to meet 53 criteria, including deficiencies in its radar- and missile-warning systems, limited internal fuel, underpowered engine relative airframe weight, and lack of electronic warfare support.

Mark 1A: Farther flying, harder to kill…and easier to unscrew?

Despite its issues, the Tejas has seemingly been well-received by Indian Air Force pilots—and the latest Mark 1A model should correct most of the major shortcomings in the Tejas Mark 1's avionics and make it substantially easier to maintain.

For example, while less costly short-range fighter make sense for a country like India facing military rivals directly on its border, the addition of an aerial refueling probe on the Mark 1A will allow more flexible use of Tejas jets on longer-range missions—thought that remains constrained by the IAF operating only six Il-78MKI air-refueling tankers.

HAL is also swapping out the Tejas's ELM-2032 doppler radar with an ELM-2052 active electronically scanned array (AESA) system. X-band AESA radars are the gold-standard in contemporary air warfare because, in addition to higher resolution and jamming resistance, they are much less susceptible to detection. That's a huge advantage, both reducing the risk of keeping the radar active, and increasing the odds of surprising an adversary.

The Israeli ELM-2052 can scan for both air and surface targets (including a synthetic aperture mapping capability) and can maintain 64 tracks simultaneously. Unofficial sources claim a range of 180 miles for large surface targets and 93-124 miles for aerial tracks with a radar cross-section of 1 meter squared.

However, European missile manufacturer MBDA has stated it will not integrate its high-performance Meteor beyond-visual range missiles, which India is procuring for its Rafale fighters. Instead, the Tejas will rely on radar-guided Israeli-built Derby missiles (range 31 to 62 miles depending on model) and indigenous Astra Mark 1 missile (range 50 miles) due for integration with Tejas.

	Tejas Mark 1	F-16C	J-10C (China)	JF-17 Block 2	Mirage 5F ROSE
Maximum Speed	Mach 1.6	Mach 2.05	Mach 2.2	Mach 1.55	Mach 1.9
Service Ceiling	50,000 ft.	50,000 ft.	59,000 ft.	55,000 ft.	59,000 ft.
Thrust-to-Weight Ratio	.94	1.1	1.15 – 1.16	.95	~.61
G Force Limit	8 /-3.5	9	9 / -3	8 / 3	
External stores (weapons, fuel and pods)	11,684 lbs on 8 hardpoints (7 for weapons)	17,000 lbs. on 11 hardpoints (9 for weapons)	15,400 lb on 11 hardpoints	10,100 lbs on 7 hardpoints (4 of which may include dual ejectors)	8,800 lb on 5 hardpoints
Ferry Range* (max fuel-only payload in external tanks)	1,986 miles	2,622 miles	2,400 miles	2,200 miles	2,500 miles
*Combat radius is a more useful metric, but unfortunately wildly divergent assumptions on weapons and fuel load by manufacturers for this metric make fair comparison difficult.					

Comparison of select single-engine fighters in South Asia. Table by author

The Tejas will also integrate the ASRAAM heat-seeking missile also used by the UK's Royal Air Force. This is essentially a longer-range (31 miles) short-range missile than most peers, and can also target aircraft up to 90-degree-off-boresight and lock-on after launch.

The Mark 1A is also receiving a new Unified Electronic Warfare Suite which ties together an improved Radar Warning Receiver to alert the pilot of hostile radar locks as well as an external EL-8222 wide-band Self Protection Jamming pods. This addition too amounts to a vital improvement to survivability.

Other trimmings include an improved "moving map" system for the pilot, which can draw on multiple satellite-navigation constellations (Russia's GLONASS, India's IRNSS).

But, as detailed in an article by *Livefist Defense*, perhaps the Mark 1A's biggest leap forward will be in terms of maintainability at the squadron (ie. local) level, including standardization of spare parts that up till now have not been interchangeable between aircraft. Moreover, many parts of the Tejas Mark 1 simply have too many screws and took forever to swap out, so they are being replaced by quick-release fasteners, while new panel-within-panel displays will allow mechanics to check systems without having to take everything part.

Tejas evolved: Mark 2 and beyond

India hopes to export the Tejas, though its mix of American, Israeli and Russian components may prove difficult to support for many clients. Egypt, Malaysia, Sri Lanka and the United Arab Emirates have nonetheless expressed interest, and potentially Indonesia and Vietnam could fit the bill as well.

No doubt as part of its bid to attract export orders, HAL has conveyed details regarding the cost of the current Tejas deal. Reportedly taxes and custom duties account for 9,200 crores, and another 11,000 crore will go to ground systems, spare parts and training support. Money is also devoted to design and development costs, and there is also 2,500 crore set aside to account for possible variations in foreign exchange rates.

Ostensibly, when you drill down, the actual airframe cost comes to 309 crore ($42 million) per Mark 1A, and 280 Crore ($38 million) per trainer. Most new jet fighters on the international market cost between $70 to $120 million per airframe.

But while the Tejas overmatches older J-7 and Mirage jets and arguably slightly outperforms the Pakistani-Chinese JF-17 Thunder (though the cheaper Thunder is also set to evolve with longer-range missiles, AESA radar and higher-thrust engines), it still doesn't match the kinematic capabilities of F-16 and J-10 single-engine fighters operated by Pakistan and China respectively.

HAL hopes to achieve that higher performance standard by swapping out the Tejas's F404 engine with the more powerful General Electric F414 turbofan used in FA-18 Super Hornet fighters and Swedish Gripen-E jets.

This Tejas Mark 2, now officially designated the Medium Weight Fighter, would feature a long-range infrared sensor, a domestic AESA radar, canards (small wings on the nose) for enhanced maneuverability, AI pilot assistance and an integrated sensor/electronic-warfare package optimized for network centric warfare. It would theoretically boast a max payload of 14,300 pounds on 11 hardpoints, and increased fuel capacity allowing for twice the range of the Tejas.

HAL claims it will complete a MWF prototype by 2022 which will make its first flight by 2023.

As a bigger stretch, HAL is proposing a twin-engine "Super Tejas" to fulfill the Indian Navy's twin-engine deck-based fighter (TE-DBF) requirement, which would also come in a land-based variant for IAF service dubbed the ORCA (Omni-Role Combat Aircraft).

However, evolutions of the Tejas face a challenge: they are non-stealth fourth-generation fighters at a time when countries around the world are pursuing stealthy, fifth-generation aircraft. As India's defense dollars are stretched thin, funding both at once may prove difficult.

Having dropped out of a joint-venture to develop an Indian-specific FGFA variant of Russia's Su-57 stealth fighter, New Delhi's bets currently are placed on developing a domestic stealth fighter by HAL called the Advanced Medium Combat Aircraft (AMCA).

HAL still hopes to make back the Tejas's protracted development cycle by rapidly improving and evolving the type in the 2020s. Time will tell whether the Indian government will remain onboard for more advanced Tejas variants as it also weighs purchases of mature foreign designs like the Rafale and F-15EX, and stealth aircraft, whether the domestic AMCA, or foreign prospects such as F-35s or Su-57s.

https://www.forbes.com/sites/sebastienroblin/2021/02/05/india-orders-83-improved-tejas-jets-more-evolutions-may-follow/?sh=5411bc244d41

Defence News

Defence Strategic: National/International

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Ministry of Defence

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President Shri Ram Nath Kovind graces valedictory function of Aero India 2021;

The Expo will help in achieving self-reliance & export growth in defence sector, says President Shri Ram Nath Kovind;

Curtains come down on the three-day event with a fabulous flying display;

Over 200 MoUs, products, technology transfers concluded

Curtains came down on the mega three-day international event Aero India 2021 on February 05, 2021 in Bengaluru where 201 Memoranda of Understanding, product launches and technology transfers were concluded to provide further impetus to the aerospace and defence industry of the country. The valedictory function was graced by President Shri Ram Nath Kovind and First Lady Smt Savita Kovind.

Over 600 exhibitors attended physically and another 108 in virtual mode. Around 3,000 Business-2-Business meetings were conducted during the event and representatives from 63 foreign countries were in attendance. The 13th edition of Aero India in its 25th year was organised amidst COVID-19 challenges as the world's first ever hybrid defence and aerospace exhibition with no public days and a concurrent virtual exhibition.

In his address President Ram Nath Kovind said, India is not just a market, but a land of immense opportunities for the whole world, including in the defence sector. He added that the government has taken a number of policy initiatives aimed at placing India among the top nations in the defence sector with twin objectives of self-reliance and export promotion. The President said that the government is focused on promoting the 'Ease of Doing Business' to encourage manufacturers to set up units in India. The President said that the reforms initiated in India in the last six years offer unprecedented opportunities to investors and private companies in the defence and aerospace sectors.

The President said that Aero India 2021 is a living proof of India's ever-growing strength in the defence and aerospace sectors at the global level. The event has exhibited that the global confidence in India's capabilities is growing steadily. Referring to the Conclave of Defence Ministers of Indian Ocean Region (IOR), on the theme of 'Enhanced Peace, Security, and Co-operation in the Indian Ocean', which was organised on the margins of Aero India 2021, the President said that India has always been an ardent advocate of universal peace and development. It is important that IOR nations focus on fostering political, economic, cultural and defence co-operation, he added.

Earlier in his address, Raksha Mantri Shri Rajnath Singh said Aero India offered a unique platform to Indian private and public sector industry and global original equipment manufacturers to forge partnerships and showcase products to potential customers. He added that despite the COVID-19 challenges, Aero India was successful in attracting 16,000 visitors physically and close to 5 lakh people virtually. He said the large number of MoUs concluded during the event and orders of over Rs 203 crores bagged by MSMEs were an indication of the exhibition's success. He emphasised that it also carries positive implications for safety and security, not just of India, but the entire region.

Raksha Mantri informed that the first ever IOR Defence Ministers' Conclave was attended by ministers and delegates from 26 countries. He said that discussions focused on synergising efforts of IOR countries in the Indian ocean and expressed belief that there would be a higher level of cooperation amongst IOR countries on peace and security in the future. A conclave of Chiefs of Air Staff was also organised to pursue the objectives of collaborative security for the region and beyond. He also referred to the iDEX 'Start-up Manthan', the 6th India-Russia Military Industrial Conference and said various seminars held on wide ranging themes would help in achieving twin objectives of *Atmanirbharata* and Defence exports. Shri Rajnath Singh reiterated that Aero India 2021 would help in achieving the target of a turnover of Rs 1,75,000 crore, including exports of Rs 35,000 crore in aerospace and defence goods & services by the year 2024. He said that in the last few years the Armed Forces had given significant support to the mission of 'Aatmanirbhar Bharat' and played an important role in promoting domestic industry.

Raksha Mantri reiterated that 'self-reliance' does not mean isolation from the world or act as a closed economy but promotes globalisation by making India a more competitive player on the global stage and inviting the global companies. He said that India will invest around 130 billion US dollars towards enhancing security by military modernisation in the next 7-8 years.

Shri Rajnath Singh concluded his address by thanking officials of the Ministry of Defence, the state administration led by Chief Minister B S Yediyurappa who was present in the function, Hindustan Aeronautics Limited and other officials who worked in organising the event.

In his welcome address, Secretary (Defence Production) Shri Raj Kumar said Aero India 2021 offered a unique opportunity to showcase India's manufacturing prowess and progress towards the vision of 'Atmanirbhar Bharat'.

The gathering at the valedictory were treated to a spectacular flying display by the amazing pilots of the Indian Air Force.

Chief of Defence Staff General Bipin Rawat, Chief of Army Staff General M M Naravane, Chief of Naval Staff Admiral Karambir Singh, Chief of Air Staff Air Chief Marshal R K S Bhadauria, Ministers and Members of Parliament from Karnataka, Defence Secretary Dr Ajay Kumar, Secretary, Department of Defence R&D and Chairman, DRDO Dr G Satheesh Reddy and senior civil and military officials of Ministry of Defence & Government of Karnataka were also present on the occasion.

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iDEX – Start-up Manthan to promote innovation in defence organised at Aero India 2021

Raksha Mantri: 60 start-ups under Defence India Start-up Challenge given grants of up to Rs 1.5 crore each

Overwhelming response to DISC with participation of over 1,200 start-ups & innovators

Raksha Mantri: 45 MSMEs at Aero India received orders worth Rs 203 crore

Raksha Mantri Shri Rajnath Singh has revealed that 60 winners out of more than 1,200 start-ups and innovators who participated in Defence India Start-up Challenge (DISC) have received grants of up to Rs 1.5 crore each to build prototypes. In his address at the Start-up Manthan organised on February 05, 2021 at Aero India 2021, Raksha Mantri announced that 45 MSMEs participating in Aero India have received orders worth Rs 203 crore. The annual flagship event was organised on the final day of Aero India 2021. Raksha Mantri asked Ministry of Defence officials to consider increasing the financial assistance extended to winners of DISC start-ups.

Raksha Mantri applauded India's ambitious start-up program which was started to harness the young talent and entrepreneurship on the clarion call of Prime Minister Shri Narendra Modi. He said Start-up India was based on three pillars – Simplification and Handholding, Funding and Incentives and Incubation and Industry-Academia Partnerships. He applauded the success of Start-up India in creating an ecosystem of more than 41,000 start-ups, 4.7 lakh jobs and Rs 4,500 crore of investment in 384 start-ups through Fund of Funds Scheme.

Shri Rajnath Singh also spoke of steps taken by the government to give a push to start-ups in the defence manufacturing system such as opening up the patents and laboratories of DRDO to private industry, setting up of Young Scientists labs in niche technology areas, programmes like iDEX, Defence India Start-up Challenge (DISC), IDEX4Fauji, etc. He added that the latest version of Defence Acquisition Procedure 2020 allows Start-ups to participate in Make-in India forums and reserves projects up to Rs 100 crore for Micro, Small and Medium Enterprises (MSMEs).

Raksha Mantri said the iDEX initiative is a decisive step towards achieving Self-reliance and is one of the most effective and well-executed defence Start-up ecosystems in the true spirit of the Aatmanirbhar Bharat.

Speaking on the aerospace sector, Shri Rajnath Singh added that 300 plus start-ups are currently engaged and iDEX 10 start-ups have developed the products worth Rs 100 crore which have been displayed in Aero India 2021.

Shri Rajnath Singh also highlighted iDEX4Fauji as an initiative providing opportunities to innovate to the Indian Armed Forces. He further said that iDEX4Fauji opens up a new window allowing Indian soldiers and service personnel to be recognised and rewarded as innovators. He mentioned the Innovations done in the field of Robotics in Maritime applications by Lt. Deepak Suman Kumar and wall penetrating Radar by Major Anoop Mishra as examples.

Speaking of the iDEX Open Challenge, Raksha Mantri added that the initiative creates opportunities for innovators to propose ways to harness technological capabilities and strengthen our nation's military capability. He ended his address expressing hope that the annual flagship event of Start-up Manthan becomes a milestone in start-up engagement in defence.

Defence Secretary Dr Ajay Kumar applauded the growth of the start-up ecosystem and identified the importance of developing standards for its sustainability in future. He mentioned that start-ups in India had treated the challenge of COVID-19 as an opportunity with funding of over Rs two lakh crore in 2020. He said that India has shown with innovations such as vaccine development, that it is among the leading innovation countries. This changed the confidence profile of Indian youth, which is on display at iDEX, he added.

Earlier, Secretary (Defence Production) Shri Raj Kumar briefed the gathering about the iDEX process and the measures taken by the Department of Defence Production to promote start-up culture and self-reliance in defence. He said that iDEX had been designed to infuse the latest technology into military warfare closely intertwined with the needs of services and to reduce dependence on imports.

Raksha Mantri handed over Certificates of recognition to innovators under iDEX4Fauji and DISC 4 challenges at the event.

Start-up Manthan is organised under the iDEX banner annually. The iDEX was launched by the Prime Minister Shri Narendra Modi in April 2018 with the core aim to create corporate models for Indian Defence needs and allow the defence sector to harness start-ups. Since its launch, iDEX has emerged as a national scale ecosystem bringing together military users and operators with start-ups, innovators and entrepreneurs. The event provided a unique opportunity to firms associated with DIO-iDEX to showcase capabilities, products and services to industry leaders and business decision makers.

Chief of Defence Staff General Bipin Rawat, Deputy Chief of Army Staff Lieutenant General Shantanu Dayal, other senior civil and military officials of Ministry of Defence were present on the occasion. Armed Forces personnel and representatives from start-ups, MSMEs also attended the event.

https://pib.gov.in/PressReleasePage.aspx?PRID=1695487

पत्र सूचना कार्यालय
भारत सरकार

रक्षा मंत्रालय

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iDEX - एयरो इंडिया 2021 में आयोजित स्टार्ट-अप मंथन

रक्षा मंत्री: डीआईएससी के तहत 60 स्टार्टअप्स को 1.5 करोड़ रुपये तक का अनुदान दिया गया

1,200 से अधिक स्टार्ट-अप्स और नवोन्मेषकों के साथ रक्षा भारत स्टार्ट-अप चैलेंज के लिए ज़बरदस्त प्रतिक्रिया

रक्षा मंत्री: एयरो इंडिया में 45 एमएसएमई को मिले 203 करोड़ रुपये के ऑर्डर

रक्षा मंत्री श्री राजनाथ सिंह ने कहा है कि डिफेंस इंडियास्टार्ट-अप चैलेंज (डीआईएससी) में भाग लेने वाले 1200 से अधिक स्टार्ट-अप्सऔर नवोन्मेषकों में से 60 विजेताओं को प्रोटोटाइप बनाने के लिए 1.5 करोड़रुपये तक का अनुदान मिला है। एयरो इंडिया 2021 में दिनांक 5 फरवरी कोआयोजित स्टार्ट-अप मंथन में अपने संबोधन में रक्षा मंत्री ने घोषणा की किएयरो इंडिया में भाग लेने वाले 45 एमएसएमई को

पहले ही 203 करोड़ रुपये केऑर्डर मिल चुके हैं। एयरो इंडिया 2021 के अंतिम दिन वार्षिक फ्लैगशिपकार्यक्रम का आयोजन किया गया । इस अवसर पर रक्षा मंत्री ने रक्षा मंत्रालयके अधिकारियों से कहा कि वे रक्षा उत्कृष्टता के लिए नवाचार (iDEX) स्टार्ट-अप्स के लिए उपलब्ध वित्त को बढ़ाने पर विचार करें।

रक्षा मंत्री ने भारत के महत्वाकांक्षी स्टार्ट अप कार्यक्रमकी सराहना की जिसे प्रधानमंत्री श्री नरेन्द्र मोदी के आह्वान पर युवाप्रतिभाओं और उद्यमिता का सदुपयोग करने के लिए शुरू किया गया था। उन्होंनेकहा कि स्टार्ट अप इंडिया तीन स्तंभों-सरलीकरण और हैंड होल्डिंग, फंडिंग औरप्रोत्साहन तथा इनक्यूबेशन और उद्योग-शिक्षा भागीदारी पर आधारित था ।उन्होंने फंड ऑफ फंड स्कीम के जरिए 41,000 से अधिक स्टार्टअप एवं 384 स्टार्ट-अप्स में 45,00 करोड़ के निवेश का पारितंत्र बनाने में स्टार्ट-अपइंडिया की सफलता की सराहना की।

श्री राजनाथ सिंह ने रक्षा विनिर्माण प्रणाली में स्टार्ट अपको बढ़ावा देने के लिए सरकार द्वारा उठाए गए कदमों जैसे रक्षा अनुसंधान एवंविकास संगठन (डीआरडीओ) के पेटेंट और प्रयोगशालाओं को निजी उद्योग के लिएखोलने, आला प्रौद्योगिकी क्षेत्रों में युवा वैज्ञानिक प्रयोगशालाओं कीस्थापना, iDEX, डिफेंस इंडिया स्टार्ट-अप चैलेंज (डीआईएससी), iDEX4Fauji आदि जैसे कार्यक्रमों की भी बात की। उन्होंने कहा कि रक्षा अधिग्रहणप्रक्रिया 2020 का नवीनतम संस्करण स्टार्ट-अप्स को मेक इन इंडिया फोरम्समें भाग लेने की अनुमति देता है और सूक्ष्म, लघु और मध्यम उद्यमों (एमएसएमई) के लिए 100 करोड़ रुपये तक की परियोजनाओं को सुरक्षित करता है।

रक्षा मंत्री ने कहा कि IDEX पहल आत्मनिर्भरता हासिल करने कीदिशा में एक निर्णायक कदम है और यह आत्मनिर्भर भारत की सच्ची भावना केअनुरूप सबसे प्रभावी और अच्छी तरह से निष्पादित रक्षा स्टार्ट-अपप्रणालियों में से एक है।

एयरोस्पेस क्षेत्र पर बोलते हुए श्री राजनाथ सिंह ने कहा किवर्तमान में 300 से अधिक स्टार्ट-अप जारी हैं और iDEX 10 स्टार्ट-अप्स ने 100 करोड़ रुपये के उत्पाद विकसित किए हैं जिन्हें एयरो इंडिया 2021 मेंप्रदर्शित किया गया है।

श्री राजनाथ सिंह ने भारतीय सशस्त्र बलों को कुछ नया करने केअवसर प्रदान करने वाली पहल के रूप में iDEX4Fauji पर भी प्रकाश डाला। उन्होंने आगे कहा कि iDEX4Fauji भारतीय सैनिकों और सेवा कर्मियों कोनवोन्मेषकों के रूप में मान्यता और पुरस्कृत करने की अनुमति देने वाली एकनया अवसर खोलता है। उन्होंने लेफ्टिनेंट दीपक सुमन कुमार द्वारा समुद्रीअनुप्रयोगों में रोबोटिक्स के क्षेत्र में किए गए नवाचारों और मेजर अनूपमिश्रा द्वारा वॉल भेदी रडार का उदाहरण के रूप में उल्लेख किया।

IDEX ओपन चैलेंज की बात करते हुए उन्होंने कहा कि यह पहलनवोन्मेषकों के लिए तकनीकी क्षमताओं का दोहन करने और हमारे देश की सैन्यक्षमता को मजबूत करने के तरीकों का प्रस्ताव करने के अवसर पैदा करती है ।रक्षा मंत्री ने अपने संबोधन को समाप्त कर आशा व्यक्त की कि स्टार्ट-अपमंथन का वार्षिक फ्लैगशिप आयोजन रक्षा क्षेत्र में स्टार्ट-अप की शुरुआतमें मील का पत्थर बन गया है।

रक्षा सचिव डॉ अजय कुमार ने स्टार्ट-अप पारितंत्र के विकास कीसराहना की और भविष्य में इसकी स्थिरता के लिए मानकों को विकसित करने केमहत्व की पहचान की । उन्होंने उल्लेख किया कि भारत में स्टार्ट-अप्स ने 2020 में दो लाख करोड़ रुपये से अधिक की फंडिंग के साथ COVID-19 की चुनौतीको एक अवसर माना था । उन्होंने कहा कि भारत ने वैक्सीन विकास जैसे नवाचारोंके साथ दिखाया है कि यह अग्रणी अभिनव देशों में से एक है । उन्होंने कहाकि इससे भारतीय युवाओं के आत्मविश्वास का स्वरूप बदल गया, जो IDEX मेंप्रदर्शित हो रहा है।

इससे पहले रक्षा उत्पादन सचिव श्री राज कुमार ने उपस्थितजनसमूह को रक्षा मंत्रालय के रक्षा उत्पादन विभाग द्वारा स्टार्ट अपसंस्कृति और रक्षा में आत्मनिर्भरता को बढ़ावा देने के लिए किए गए उपायोंके बारे में जानकारी दी। उन्होंने कहा कि IDEX को सैन्य युद्धों मेंनवीनतम प्रौद्योगिकी को बढ़ावा देने के लिए तैयार किया गया था जो सैन्यसेवाओं की जरूरतों के साथ बारीकी से जुड़ा हुआ है और आयात पर निर्भरता कोकम करने के लिए है।

रक्षा मंत्री ने इस कार्यक्रम में iDEX4Fauji और डीआईएससी 4 चैलेंजेज़ के तहत नवोन्मेषकों को मान्यता के प्रमाण पत्र सौंपे।

स्टार्ट-अप मंथन का आयोजन सालाना iDEXबैनर के तहत किया जाताहै । भारतीय रक्षा जरूरतों के लिए कॉर्पोरेट मॉडल बनाने और रक्षा क्षेत्रको स्टार्ट-अप्स का इस्तेमाल करने की अनुमति देने के मुख्य उद्देश्य के साथअप्रैल 2018 में प्रधानमंत्री द्वारा iDEXकी शुरुआत की गई थी । इसकेशुभारंभ के बाद से, iDEXएक राष्ट्रीय स्तर के पारितंत्र के रूप में उभराहै जो सैन्य उपयोगकर्ताओं और ऑपरेटरों को स्टार्ट-अप, नवोन्मेषकों औरउद्यमियों के साथ एक साथ ला रहा है । इस कार्यक्रम ने उद्योग जगत के नेताओंऔर व्यापार संबंधी निर्णय निर्माताओं को क्षमताओं, उत्पादों और सेवाओं कोप्रदर्शित करने के लिए DIO-iDEXसे जुड़ी फर्मों को एक अनूठा अवसर प्रदानकिया।

इस अवसर पर चीफ़ ऑफ डिफेंस स्टाफ जनरल बिपिन रावत, उपसेनाध्यक्ष लेफ्टिनेंट जनरल शांतनु दयाल, रक्षा मंत्रालय के अन्य वरिष्ठनागरिक व सैन्य अधिकारी मौजूद रहे। सशस्त्र बलों के कार्मिकों औरस्टार्ट-अप्स, एमएसएमई के प्रतिनिधियों ने भी इस कार्यक्रम में भाग लिया।

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Ministry of Defence

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201 MoUs, product launches and technology transfers concluded at Aero India 2021

Raksha Mantri: India's Defence & Aerospace vision rests on three pillars – R&D, Public-Private Defence Production & Exports

A total of 201 MoUs, product launches and technology transfers were concluded at the Bandhan ceremony held on the last day of Aero India 2021 at Yehalanka, Bengaluru on February 05, 2021. These included the formal handing over of the Advanced Light Helicopters MK-III to the Indian Navy and Indian Coast Guard (ICG), commencement of Performance based logistics of ICG fleet, initial operational clearance of Army version of Light Utility Helicopter etc.

In his address, Raksha Mantri Shri Rajnath said Bandhan exemplifies the spirit of public-private partnership in defence and aerospace sectors and have forged strategic ties that are poised to transform defence and aerospace manufacturing. He said 128 MoUs, 19 ToTs, 4 Handing Overs, 18 Product Launches and 32 major announcements were made at Aero India this year. He said Prime Minister Shri Narendra Modi's clarion call for Atmanirbhar Bharat ignited the country's spirit of innovation and collaboration.

Raksha Mantri said the foundation of India's vision rests on three pillars - Research and Development, Public and Private Defence Production and Defence Exports. Referring to the field of research and development, he said there was an attempt to broaden the research base of the

nation by supporting and encouraging the private sector. In this context, he mentioned that some patents of DRDO have been shared with the private sector to assist in defence production ventures.

Shri Rajnath Singh mentioned initiatives to encourage and facilitate private sector R&D initiatives such as iDEX and Defence India Start-up Challenge (DISC). He recalled innovations such as the combat drone display, a part of the swarm technology initiative, exhibited during the Army Day function on 15 January 2021 at New Delhi.

Raksha Mantri reiterated India's intention to bring down defence imports by at least $2 billion by 2022 to encourage local defence manufacturing. He informed that 138 proposals worth over $37 billion for domestic manufacturing were approved between 2016 and 2019. Highlighting the importance of the requisite eco-system for the growth of the defence industry, Shri Rajnath Singh said Rs 6,800 crore investments were pledged by both public and private industries in the defence corridors of Uttar Pradesh and Tamil Nadu.

Shri Rajnath Singh also spoke of the need for a robust domestic manufacturing base for defence export potential of the country. He reiterated the target of increasing the country's defence base from $11 billion to $25 billion by 2025 including an export component of $5 billion. Defence exports grew from Rs 2000 crores to Rs 9000 crores from 2015-2020 with a vast majority spearheaded by the private sector. With reference to the Indian aerospace industry he said that the aero components sector is set to grow from Rs. 30,000 crores today to Rs. 60,000 crores by 2024. He enumerated the cost competitiveness of India's manpower resources, availability of abundant, specialist capabilities and geographical advantages as reasons for its emergence as a global and regional Maintenance and Repair Operations hub. Hailing the agreements concluded at Aero India 2021 Raksha Mantri said they would give impetus to 'Make In India' and 'Atmanirbhar Bharat' and assured the gathering his Ministry would do everything possible to ensure the agreements are implemented.

Secretary (Defence Production) Shri Raj Kumar delivered the welcome address. Chief of Defence Staff General Bipin Rawat, Chief of Naval Staff Admiral Karambir Singh, Chief of Army Staff General MM Naravane, Secretary, Department of Defence R&D and Chairman DRDO Dr Satheesh Reddy, DG Coast Guard Shri K Natarajan and Air Officer (Maintenance) Air Marshal Vibhas Pandey were also present at the event. Karnataka Chief Secretary Shri P Ravi Kumar delivered the vote of thanks.

https://pib.gov.in/PressReleasePage.aspx?PRID=1695553

पत्र सूचना कार्यालय
भारत सरकार

रक्षा मंत्रालय

Fri, 05 Feb 2021 6:10PM

एयरो इंडिया 2021 में 201 एमओयू, उत्पाद लॉन्च और प्रौद्योगिकी हस्तांतरण संपन्न

रक्षा मंत्री: भारत का रक्षा और एयरोस्पेस नज़रिया तीन स्तंभों- अनुसंधान और विकास, सार्वजनिक-निजी रक्षा उत्पादन और निर्यात पर टिका हुआ है

एयरो इंडिया 2021 के अंतिम दिन दिनांक 5 फरवरी, 2021 को बेंगलुरु के येहलंका में आयोजित बंधन समारोह में कुल 201 एमओयू, प्रोडक्ट लॉन्च और प्रौद्योगिकी हस्तांतरण का समापन किया गया। इनमें भारतीय नौसेना और भारतीय तटरक्षक (आईसीजी) को उन्नत हल्के हेलीकॉप्टर एमके-3 को औपचारिक रूप से सौंपना, आईसीजी बेड़े के प्रदर्शन आधारित रसद की शुरुआत करना, लाइट युटिलिटी हेलीकॉप्टर के सेना संस्करण की प्रारंभिक परिचालन मंजूरी आदि शामिल थे।

रक्षा मंत्री श्री राजनाथ सिंह ने अपने संबोधन में कहा कि बंधन रक्षा और एयरोस्पेस क्षेत्रों में सार्वजनिक-निजी क्षेत्र की भागीदारी की भावना का उदाहरण है और इससे रणनीतिक संबंध बने हैं जो रक्षा और एयरोस्पेस विनिर्माण को रूपांतरित करने के लिए तैयार हैं। उन्होंने कहा कि इस वर्ष एयरो इंडिया में 128 एमओयू, 19 टीओटी, 4 हैंडिंग ओवर, 18 उत्पाद लॉन्च और 32 प्रमुख घोषणाएं की गईं। उन्होंने कहा कि प्रधानमंत्री श्री नरेन्द्र मोदी के आत्मनिर्भर भारत अभियान के आह्वान से देश में नवाचार और सहयोग की भावना प्रज्ज्वलित हुई।

रक्षा मंत्री श्री राजनाथ सिंह ने कहा कि भारत के दृष्टिकोण की बुनियाद तीन स्तंभों- अनुसंधान एवं विकास, सार्वजनिक और निजी रक्षा उत्पादन तथा रक्षा निर्यात पर टिकी हुई है। अनुसंधान एवं विकास के क्षेत्र का जिक्र करते हुए उन्होंने कहा कि निजी क्षेत्र को समर्थन और प्रोत्साहित करके राष्ट्र के अनुसंधान आधार को व्यापक बनाने का प्रयास किया गया। इस संदर्भ में उन्होंने उल्लेख किया कि रक्षा उत्पादन उद्यमों में सहायता के लिए रक्षा अनुसंधान एवं विकास संगठन (डीआरडीओ) के कुछ पेटेंट निजी क्षेत्र के साथ साझा किए गए हैं।

श्री राजनाथ सिंह ने निजी क्षेत्र की अनुसंधान और विकास पहलों जैसे iDEX और डिफेंस इंडिया स्टार्ट-अप चैलेंज (डीआईएससी) को प्रोत्साहित और सुगम बनाने के लिए उठाए कदमों का उल्लेख किया । उन्होंने नई दिल्ली में 15 जनवरी 2021 को सेना दिवस समारोह के दौरान प्रदर्शित कॉम्बैट ड्रोन डिस्प्ले- स्वार्म प्रौद्योगिकी पहल के एक हिस्से- जैसे नवाचारों को याद किया ।

रक्षा मंत्री श्री राजनाथ सिंह ने स्थानीय रक्षा विनिर्माण को प्रोत्साहित करने के लिए 2022 तक रक्षा आयात में कम से कम 2 अरब डॉलर की कमी लाने की भारत की मंशा दोहराई । उन्होंने बताया कि 2016 से 2019 के बीच घरेलू विनिर्माण के लिए 37 अरब डॉलर से अधिक के 138 प्रस्तावों को मंजूरी दी गई । रक्षा उद्योग के विकास के लिए अपेक्षित पारिस्थितिकी प्रणाली के महत्व पर प्रकाश डालते हुए श्री राजनाथ सिंह ने कहा कि उत्तर प्रदेश और तमिलनाडु के रक्षा गलियारों में सार्वजनिक और निजी दोनों उद्योगों द्वारा 6,800 करोड़ रुपये के निवेश का वादा किया गया था।

श्री राजनाथ सिंह ने देश की रक्षा निर्यात क्षमता के लिए एक मजबूत घरेलू विनिर्माण आधार की आवश्यकता के बारे में भी बताया । उन्होंने 5 अरब डॉलर के निर्यात घटक सहित 2025 तक देश के रक्षा आधार को 11 अरब डॉलर से बढ़ाकर 25 अरब डॉलर करने का लक्ष्य दोहराया । रक्षा निर्यात 2000 करोड़ रुपये से बढ़कर 2015-2020 तक 9000 करोड़ रुपये हो गया। भारतीय एयरोस्पेस उद्योग के संदर्भ में उन्होंने कहा कि एयरो कंपोनेंट्स सेक्टर आज 30,000 करोड़ रुपये से बढ़कर 2024 तक 60,000 करोड़ रुपये हो जाएगा। उन्होंने वैश्विक और क्षेत्रीय रखरखाव एवं मरम्मत संचालन हब के रूप में उभरने के कारणों के रूप में भारत के जनशक्ति संसाधनों की लागत प्रतिस्पर्धात्मकता, प्रचुर मात्रा में, विशेषज्ञ क्षमताओं और भौगोलिक लाभों की गणना की। एयरो इंडिया 2021 में संपन्न समझौतों की सराहना करते हुए रक्षा मंत्री ने कहा कि वे 'मेक इन इंडिया' और 'आत्मनिर्भर भारत' को बढ़ावा देंगे तथा उन्होंने आश्वासन दिया कि उनका मंत्रालय समझौतों को लागू करने के लिए हर संभव प्रयास करेगा।

रक्षा उत्पादन सचिव श्री राज कुमार ने स्वागत भाषण दिया । इस अवसर पर चीफ ऑफ डिफेंस स्टाफ जनरल बिपिन रावत, नौसेना प्रमुख एडमिरल करमबीर सिंह, सेनाध्यक्ष जनरल एम एम नरवणे, रक्षा अनुसंधान एवं विकास विभाग के सचिव डॉ सतीश रेड्डी, कोस्ट गार्ड के महानिदेशक श्री के नटराजन और एयर ऑफिसर (मेंटेनेन्स) एयर मार्शल विभास पांडे भी मौजूद थे। कर्नाटक के मुख्य सचिव श्री पी रवि कुमार ने धन्यवाद प्रस्ताव दिया।

https://pib.gov.in/PressReleasePage.aspx?PRID=1695832

Press Information Bureau
Government of India

Ministry of Defence

Fri, 05 Feb 2021 7:34PM

Vice Chief of the Air Staff Visits Aero India-2021

Air Marshal Harjit Singh Arora PVSM AVSM ADC, Vice Chief of the Air Staff, visited Air Force Station Yelahanka for participating in Aero India 20-21. The Air Marshal reviewed various indigenous and foreign technologies and systems being offered and emphasized on the need for enhancing self reliance with development of platforms like LCA, HTT-40, LCH and LUH. He flew a General Handling Sortie in HTT-40 and appreciated the efforts made by HAL in developing the aircraft.

The Air Marshal also interacted with the Indian and foreign industry representatives for enhancing operational capability of IAF as the first responders in preserving interests of our Nation.

https://pib.gov.in/PressReleasePage.aspx?PRID=1695619

Press Information Bureau
Government of India

Ministry of Defence

Fri, 05 Feb 2021 6:12PM

Operationalisation of IAF-HAL e-portal

IAF and HAL have operationalised an e-Portal as part of Inter-Organisational Information Sharing System (IOIS) during the Aero India 2021.

The e-Portal will optimize long-term sustenance planning and reduce repair and overhaul cycle time. This will facilitate smooth, safe and secure method of data transfer between the two organisations. This will enhance optimization of task and increase efficiency in productivity and availability of spares to IAF. It will also reduce the time for finalization of tasking and budgetary quotation processes.

The initiative was launched by the Chief of the Air Staff, Air Chief Marshal RKS Bhadauria in presence of the Chairman HAL, DCAS and AOC-in-C MC. Welcoming the initiative, the CAS said that the e-Portal will bolster the competencies of both the organisations and will lead to increased serviceability of IAF weapon systems. It will also facilitate secure information sharing between IAF and HAL for better coordination, improved transparency and faster decision-making.

R Madhavan, CMD HAL, said the customer-centric portal would go a long way in leveraging the benefits of information sharing in real time. It will also enable the visibility of HAL repair milestones, provide instantaneous Budgetory quotations against IAF orders and give information on status of supply against Aircraft on Ground and tasks involved.

https://pib.gov.in/PressReleasePage.aspx?PRID=1695555

Press Information Bureau
Government of India

Ministry of Defence

Fri, 05 Feb 2021 4:51PM

HAL hands over five ALHs Mk III to Indian Navy and Indian Coast Guard

Hindustan Aeronautics Limited (HAL) has handed over three Advanced Light Helicopters (ALH) Mk III to Indian Navy and two ALHs to Indian Coast Guard as part of its 16 ALHs contract during the ongoing Aero India 2021 at Air Force Station Yehalanka, Bengaluru on February 05, 2021. The helicopters were handed over by Chairman and Managing Director of HAL Shri R Madhavan to Chief of Naval Staff Admiral Karambir Singh and Director General Coast Guard Shri K Natarajan in the presence of Raksha Mantri Shri Rajnath Singh.

The ALH has clogged close to 3,00,000 cumulative flight hours and proven its mettle in versatile operations. The ALH Mk III is fitted with state-of-the-art glass cockpit and powerful Shakti engine. The contract involves integration of 19 major systems with the existing ALH MK III that include IFF MKXII & ATC Xpdr with ADS-B Out, V/UHF Communication System, Traffic Alert and Collision Avoidance (TCAS-I), SAR Homer system, Automatic Deployable Emergency Locator Transmitter (ADELT), Loud Hailer, Radio altimeter, Rescue Basket, Medical Intensive Care Unit (MICU), IADS System, AFCS, Digital Video Recording System (SSDVR), Automatic Identification System (AIS), High Intensity Search Light (HISL), Pressure Refueling System, Control grips, EO POD Rev III, Surveillance Radar System and 12.7 mm Gun system.

https://pib.gov.in/PressReleasePage.aspx?PRID=1695519

Press Information Bureau
Government of India

Ministry of Defence

Fri, 05 Feb 2021 4:52PM

HAL LUH (Army Variant) receives initial operational clearance

The Light Utility Helicopter (LUH) received the Initial Operational Clearance (IOC) for the Indian Army from Centre for Military Airworthiness and Certification (CEMILAC) in the presence of Raksha Mantri Rajnath Singh during the ongoing Aero India 2021 at Air Force Station Yehalanka, Bengaluru on February 05, 2021.

Hindustan Aeronautics Limited (HAL) Chairman and Managing Director Shri R Madhavan said the thrust is being given by HAL for indigenous R&D programmes towards self-reliance and enhancing operational effectiveness of the Armed Forces.

Director (Engg. and R&D) Mr Arup Chatterjee stated that the performance of the basic helicopter in all terrains and under all weather conditions is satisfactory. HAL is currently in the phase of integrating and flight-testing mission role equipment on LUH. HAL is fully geared up to fulfil the requirements of the customers in time bound manner

The LUH is a three-ton class new generation single engine helicopter indigenously designed and developed by Rotary Wing Research and Design Centre of HAL with features suitable for operations in the diverse operating conditions unique to India. The LUH will replace the ageing fleet of Cheetah/Chetak helicopters operated by the Services.

The LUH is powered by a single turbo shaft engine Ardiden 1U from M/s. Safran Helicopter Engine (SHE), France with adequate power margins to accomplish high altitude missions in Himalayas with ease. LUH is equipped with Smart Cockpit Display System (Glass Cockpit), state-of-the-art HUMS (Health & Usage Monitoring System) and is designed for various utility and armed roles.

All certification activities like Ground testing, Ground Test Vehicle endurance runs, system testing, Flight testing including hot weather trials, cold weather trials, sea level trials and hot weather high altitude trials have been completed. Based on the flight trials carried out, all PJSQR requirements for basic helicopter certification have been complied satisfactorily.

https://pib.gov.in/PressReleasePage.aspx?PRID=1695521

Press Information Bureau
Government of India

Ministry of Defence

Fri, 05 Feb 2021 9:33AM

Global Chiefs' of Air Staff conclave conducted by IAF on 03 & 04 Feb 21

Indian Air Force hosted a two day Global Chiefs' of Air Staff Conclave on 03 & 04 February 21 themed 'Leveraging Aerospace Power for Security and Stability' on Day 2 & 3 of Aero India 21. The conclave was inaugurated by Hon'ble Raksha Mantri, Shri Rajnath Singh on 03 Feb 21. In his inaugural address, RM stated that the CAS conclave brought together Chiefs and senior dignitaries from Air Forces across the world and was a befitting event as part of Aero India, with primary focus on Air Power & associated technologies. Chief of Defence Staff, Gen Bipin Rawat graced the inaugural session.

Welcoming all guests, Chief of the Air Staff, Air Chief Marshal RKS Bhadauria outlined the significance of CAS conclave in enabling exchange of ideas & enhancement of multilateral cooperation between the participating Air Forces. He reiterated the role of Air Power as a crucial enabler for ensuring peace, stability & security in the region.

The Conclave was organised in a hybrid format to obviate restrictions imposed due to the Covid-19 pandemic and was attended by close to 50 countries. Between 03 & 04 Feb, Chiefs/ Commanders of Air Forces of 28 countries joined the Conclave. The Conclave was conceived for exchange of ideas and best practices on themes of contemporary relevance in the aerospace domain. Countries participated from across continents with Air Forces from the Americas, Europe, Middle East, West Asia, Central Asian republics, South East Asia, Africa, Indian Ocean region and the Indo Pacific.

The three sessions of the CAS Conclave provided a forum to discuss important issues with respect to aerospace strategy, emerging technologies impacting the battle space and issues pertaining to security and stability of the Global Commons. These sessions were planned to address themes of "Disruptive Technologies and Innovations", "Air Power in the Indo-Pacific Region" and "Air Power and Aerospace Strategy".

The CAS thanked all Chiefs, nominated country representatives and delegates attending the event and for their valuable contribution during the Conclave. He added that the takeaways from the Conclave would enable increased understanding and cooperation between the Air forces and help forge enhanced multilateral capabilities.

https://pib.gov.in/PressReleasePage.aspx?PRID=1695377

पत्र सूचना कार्यालय
भारत सरकार

रक्षा मंत्रालय

Fri, 05 Feb 2021 9:33AM

भारतीय वायुसेना ने 3 और 4 फरवरी, 2021 को ग्लोबल चीफ्स ऑफ एयर स्टॉफ सम्मेलन का आयोजन किया

भारतीय वायुसेना ने 3 और 4 फरवरी, 2021 को दो दिवसीय ग्लोबल चीफ्स ऑफ एयर स्टॉफ सम्मेलन की मेजबानी की। एयरो इंडिया 2021 के दूसरे और तीसरे दिन का विषय था 'सुरक्षा और स्थिरता के लिए एयरोस्पेस की शक्ति का लाभ उठाना'। इस सम्मेलन का उद्घाटन रक्षा मंत्री श्री राजनाथ सिंह ने 3 फरवरी, 2021 को किया था। अपने उद्घाटन सम्मेलन में रक्षा मंत्री ने कहा कि सीएएस सम्मेलन दुनिया भर की वायु सेनाओं के प्रमुखों और वरिष्ठ गणमान्य व्यक्तियों को एक मंच पर लाया है और यह एयरोइंडिया के एक हिस्से के रूप में शानदार आयोजन है। इस सम्मेलन में मुख्य रूप से एयर पावर और संबंधित प्रौद्योगिकियों पर ध्यान केन्द्रित किया गया। चीफ ऑफ डिफेंस स्टॉफ जनरल बिपिन रावत की उद्घाटन सत्र में गरिमामयी उपस्थिति रही।

सभी अतिथियों का स्वागत करते हुए वायुसेना प्रमुख एयर चीफ मार्शल आरकेएस भदौरिया ने भागीदारी करने वाली वायु सेनाओं के बीच विचारों के आदान-प्रदान और बहुपक्षीय सहयोग बढ़ाने में इस सम्मेलन के महत्व को रेखांकित किया। उन्होंने इस क्षेत्र में शान्ति, स्थिरता और सुरक्षा सुनिश्चित करने के लिए एक महत्वपूर्ण सक्षमकर्ता के रूप में एयर पावर की भूमिका को दोहराया।

यह सम्मेलन कोविड-19 महामारी के कारण लागू किए गए प्रतिबंधों का निवारण करते हुए हाईब्रिड प्रारूप में आयोजित किया गया, जिसमें लगभग 50 देशों ने भाग लिया। 3 और 4 फरवरी के बीच इस सम्मेलन में 28 देशों की वायुसेनाओं के प्रमुख/ कमांडर शामिल हुए। इस सम्मेलन को एयरोस्पेस क्षेत्र में समकालीन प्रासंगिकता के विषयों पर श्रेष्ठ प्रक्रियाओं और विचारों के आदान-प्रदान के लिए आयोजित किया गया था। इस सम्मेलन में अमेरिका, यूरोप, मिडिल ईस्ट, पश्चिम एशिया, मध्य एशियाई गणराज्य, दक्षिण पूर्व एशिया, अफ्रीका, हिंद महासागर क्षेत्र और हिंद प्रशांत की वायु सेनाओं के साथ महाद्वीप के देशों ने भागीदारी की।

सीएएस सम्मेलन के तीन सत्रों ने एयरोस्पेस रणनीति युद्ध स्थल पर प्रभाव डालने वाली उभरती हुई प्रौद्योगिकियों और ग्लोबल कॉमन्स की स्थिरता एवं सुरक्षा से संबंधित महत्वपूर्ण मुद्दों पर विचार-विमर्श के लिए एक मंच उपलब्ध कराया।

इन सत्रों में विघटनकारी प्रौद्योगिकियों और नवाचारों, एशिया प्रशांत क्षेत्र में एयर पावर और एयर पावर एवं एयरोस्पेस रणनीति जैसे विषयों को संबोधित करने की योजना बनाई गई थी।

सीएएस ने सभी वायुसेना प्रमुखों तथा इस आयोजन में भाग ले रहे नामांकित देश, प्रतिनिधियों और शिष्टमंडलों का इस सम्मेलन के दौरान बहुमूल्य योगदान देने के लिए धन्यवाद दिया। उन्होंने कहा कि इस सम्मेलन से प्राप्त जानकारी वायु सेनाओं के बीच समझ और सहयोग को बढ़ाने में समर्थ बनाएंगी और बहुपक्षीय क्षमताओं को बढ़ाने में भी मदद करेगी।

https://pib.gov.in/PressReleasePage.aspx?PRID=1695458

TIMESNOWNEWS.COM

Sat, 06 Feb 2021

Exclusive: 'Virtual status quo at LAC,' says IAF Chief on border dispute with China

RKS Bhadauria asserted that the induction of Rafale has increased IAF's capability and made it more than capable to deal with the Chinese situation

Key Highlights

- ***The talks are going on between China and India, and the last round of discussion progressed well: IAF Chief RKS Bhadauria***
- ***The arrival of Rafale in India has rattled both China and Pakistan: IAF Chief***

New Delhi: Indian Air Force (IAF) chief RKS Bhadauria on Friday said there is virtual status quo at the Line of Actual Control (LAC) and the talks are progressing well between India and China. He also asserted that the induction of Rafale in the IAF has caused worries in China and Pakistan.

IAF Chief RKS Bhadauria | Photo Credit: PTI

While speaking with Times Now, RKS Bhadauria said, "There is a virtual status quo at the LAC. The talks are going on between the two sides and the last round of discussions went well."

He said the Indian Air Force will decide the next course of action once both the sides agree to de-escalate and disengage from the border. "We are only taking actions as per the developments across the border," he added.

Talking about the sightings of China's J-20 aircraft near Eastern Ladakh, the IAF chief said that China had brought their J-20 fighter aircraft (to areas close to Eastern Ladakh) and they go off from there but that is the flexibility of air power.

The moment Indian Rafales were brought in, their J-20 was there. We know their actions and capabilities, he added.

RKS Bhadauria asserted that the induction of Rafale has increased IAF's capability and made it more than capable to deal with the Chinese situation.

Highlighting how Rafale's arrival has changed the dynamics at borders, the IAF chief claimed there has been a lot of development on both Chinese and Pakistan's border since the induction of Rafale.

China has been bolstering its front with J-20 aircraft while the western side may also be planning some actions at its borders, said Bhadauria.

When quizzed about India's increasing interest in unmanned aerial vehicles (UAVs), the IAF chief said the changing threats and scenarios are the main reason behind the interest. However, there is a need to further develop these UAVs, he added.

Talking about the technology named Combined Air Teaming System (CATS), an amalgamation of manned and unmanned tech, Bhadauria said the new revolutionary technology is likely to come into effect in the next decade.

https://www.timesnownews.com/india/article/exclusive-virtual-status-quo-at-lac-says-iaf-chief-on-border-dispute-with-china/716423

जागरण

Sat, 06 Feb 2021

तटीय सुरक्षा होगी मजबूत, भारतीय नौसेना को मिले HAL के तीन Mk III एडवांस लाइट हेलीकॉप्टर

26/11आतंकी हमले के बाद देश की तटीय सुरक्षा की जिम्मेवारी भारतीय नौसेना को दे दी गई। अब बेंगलुरु में एयरो इंडिया शो के दौरान हिंदुस्तान ऐयरोनॉटिक्स लिमिटेड की ओर से नौसेना को दिए गए मल्टी मिशन हेलीकॉप्टरों इनकी जिम्मेदारी में अहम भूमिका निभाएंगे।

By Monika Minal

बेंगलुरु: हिंदुस्तान एयरोनॉटिक्स लिमिटेड की ओर से शुक्रवार को तीन एडवांस लाइट हेलीकॉप्टर (ALH) भारतीय नौसेना (Indian Navy) को सौंप दिया गया। ये तीनों स्वदेशी हैं। देश में बनाए गए (made in India) इन हेलीकॉप्टरों में तटीय सुरक्षा (coastal security) की क्षमता है। मार्क -III ALH का निर्माण तटीय सुरक्षा के लिए किया गया। HAL ने एयरो इंडिया के दौरान 16 Mk-III हेलीकॉप्टरों में से तीन को भारतीय नौसेना प्रमुख एडमिरल करमबीर सिंह (Indian Navy Chief Admiral Karambir Singh) को सौंप दिया।

बता दें कि ये मल्टी मिशन हेलीकॉप्टर हैं। इनमें एडवांस सेंसर लगे हैं। इसमें फुल ग्लास कॉकपिट के साथ HAL के इंटीग्रेटेड आर्किटेक्चर डिस्प्ले सिस्टम (IADS) लगे हैं। इसके अलावा इसमें नए सिस्टम व अधिक ताकतवर शक्ति (Safran Ardiden 1H1) इंजन भी है। भारतीय नौसेना ने 16 Mk-III का ऑर्डर दिया था ताकि इसके पुराने फ्लीट की घटती कार्यक्षमता की भरपाई हो सके। यह 26/11 मुंबई आतंकी हमलों के बाद सरकार द्वारा नौसेना को दी गई तटीय सुरक्षा की जिम्मेदारी में मदद करेगा। इस आतंकी हमले में 166 लोगों की मौत हो गई थी। ये हेलीकॉप्टर एवायोनिक्स (avionics) व अन्य महत्वपूर्ण उपकरणों से लैस हैं। ALH में ऐसे एडवांस सेंसर लगे हैं जिससे मुंबई आतंकी हमलों जैसे भारतीय जलक्षेत्र में घुसपैठ की भनक पहचान इसका सामना कर सकती है। इसमें ऐसे निगरानी रडार लगे हैं अनेकों टारगेट से निपट सकता है।

3 फरवरी को तीन दिवसीय एयरो इंडिया की शुरुआत हुई जिसका रक्षा मंत्री राजनाथ सिंह ने उद्घाटन किया था। शो का 13वां संस्करण इस बार पूरी तरह 'आत्मनिर्भर भारत' की झलक दिखा रहा था। मेक इन इंडिया पर जोर देने वाले इस शो में HAL ने बड़े पैमाने पर अपने विमानों और हेलीकॉप्टरों का प्रदर्शन किया। शो के आखिरी दिन आज अमेरिकी वायु सेना B-1B Lancer bomber ने दो लड़ाकू विमान तेजस के साथ उड़ान भरी। साथ ही भारत वायु सेना के हेलीकॉप्टर एयरोबैटिक टीम 'सारंग' ने भी आसमान में अपना दम दिखाया।

https://www.jagran.com/news/national-indian-navy-receives-3-mk-iii-advanced-light-helicopters-from-hal-21338837.html

Sun, 07 Feb 2021

Chennai-based start up collaborates with BEML For development of AI-based unmanned ground vehicles for the Indian Army

By Aishwarya Dharni

Highlights

- ***Vibhakar Senthil, Vignesh M, Abbhi Vignesh K are the founders of the start-up and all of them are mechatronics engineers.***
- ***The trio was initially struggling but their persistent hard work finally showed results when they tied up with BEML to develop AI-based unmanned ground vehicles.***

AI is the future and the Indian Army is more than prepared to keep up with it. A Chennai-based start-up by three engineering graduates has tied up with BEML (the biggest Defence, Mining & Construction and Rail Coach manufacturer in India) for joint development of Artificial intelligence (AI) based indigenous unmanned ground vehicle (UGV).

Vibhakar Senthil, Vignesh M, Abbhi Vignesh K are the founders of the start-up and all of them are mechatronics engineers. All three have a Masters in Business Administration (MBA) degree. The trio was initially struggling but their persistent hard work finally showed results when they tied up with BEML to develop AI-based unmanned ground vehicles.

"The product we are going to develop is 750Kg UGV, which can be used for extreme weather and terrain conditions. It is autonomous and can be used for logistics and surveillance," said Vibhakar.

They also mentioned that the Army Design Bureau helped them in the initial stages.

"We did a proper research on what our jawans want before embarking on developing the product," added Vibhakar.

Normally, a jawan carries more than 60 kg of equipment at high altitude and needless to say, it is extremely difficult. The unmanned ground vehicle will now carry the heavy load which is usually carried by 10 jawans.

They will also able to provide them with power through the UGV battery.

"This will help provide our jawans a technological advantage," said Vibhakar.

"The product is expected to be launched by the end of this year. And the production can begin by 2023. The electric motor which we developed for UGV is the most efficient one and we are trying to tap the electric vehicle market also," said the SRM graduate.

https://www.indiatimes.com/trending/social-relevance/chennai-start-up-to-develop-ai-based-unmanned-vehicles-for-indian-army-533714.html

THE HINDU

Mon, 08 Feb 2021

Ukraine looking at defence purchases from India

Four agreements worth $70 mn for weapons, upgrades from Kyiv signed at Aero India

By Dinakar Peri

Bengaluru: Ukraine is looking to procure some military hardware from India in addition to efforts to deepen its presence in the Indian defence market, said Yuriv Husyev, General Director of Ukroboronprom, the umbrella corporation of Ukrainian state defence companies.

The two sides will discuss a range of proposals to take forward bilateral cooperation at the Bilateral Working Group meeting between the two defence ministries in April. The Ukrainian delegation for this would be led by their Deputy Defence Minister.

Defence Minister Rajnath Singh had held discussions with his Ukranian counterpart who led a delegation at the Aero India Expo. File | Photo Credit: Sandeep Saxena

"Yes, we had some discussions about cooperation in Navy and Air Force. I guess we have a lot of work to do… We have some ideas and will discuss these ideas in Ukraine in Ministry of Defence and armed forces of Ukraine," Mr. Husyev said, speaking to *The Hindu* at the Aero India on Ukraine's interest in acquiring military equipment from India.

Ukraine has signed four agreements worth $70 million which includes sale of new weapons as well as maintenance and upgrades of existing ones in service with the Indian armed forces, he stated. Some members of the Ukrainian delegation will remain in India for some days after the air show to carry out further discussions on the four agreements.

Ukrainian Defence Minister Andriy Taran, who led a delegation at the Aero India, held discussions with Defence Minister Rajnath Singh. The two Ministers had a great discussion, he stated.

"We presented our proposals with new weapons and aircraft for the Indian armed forces," Mr. Husyev added. This includes a pitch to India of its AN-178 medium transport aircraft.

Ukraine is currently upgrading the AN-32 transport fleet of the Indian Air Fore (IAF) under a deal finalised in 2009. Of the over 100 aircraft, 40 were upgraded in Ukraine and the remaining are to be done by the IAF Base Repair Depot in Kanpur, with upgrade kits supplied by Antonov. Ukraine has in the past pitched its AN-132 transport aircraft as a replacement for the IAF's AN-32 fleet.

Ukraine also manufactures the R-27 air-to-air missiles which are in use by the IAF on its SU-30MKI fighters.

The Ukraine team also held discussions with the Defence Research and Development Organisation (DRDO) and looked at possible collaborations in research and development.

At Aero India 2021 last week, India made a strong pitch to the world of its indigenous military capabilities and ability to supply a range of military hardware. Mr. Singh had said India was ready to supply missile systems, Light Combat Aircraft (LCA), helicopters, warships and patrol vessels, artillery gun systems, tanks, radars, military vehicles and electronic warfare systems among others to countries in the Indian Ocean Region (IOR).

https://www.thehindu.com/news/national/ukraine-looking-at-defence-purchases-from-india/article33774835.ece

oneindia®

Sat, 06 Feb 2021

Aero India 2021: Lockheed Martin signs pact with Hindustan Aeronautics Limited

By Vikash Ajyappa

Bengaluru: US defence major Lockheed Martin on Friday said it signed an agreement with state-run Hindustan Aeronautics Limited (HAL) to explore potential industrial collaboration in India's aerospace sector.

Lockheed Martin said it was strengthening its relationships with the Indian industry and was working towards integrating it into the company's global aerospace and defence ecosystem.

"We are excited to explore potential opportunities with HAL, one of the largest aerospace companies in Asia," said JR McDonald, Vice President of Business Development - Integrated Fighter Group of Lockheed Martin Aeronautics.

"We are committed to continuing to integrate Indian industry into our aerospace and defense ecosystem and demonstrating Lockheed Martin's commitment to India now and in the decades to come," he said.

R Madhavan, Chairman and Managing Director of HAL, said his organisation is looking forward to working with Lockheed Martin in exploring opportunities in the domestic and international markets.

"Lockheed Martin is strengthening and growing its relationships with Indian industry to generate jobs and economic benefits in support of "Make in India", "self-reliant India", and "start-up India" initiatives, as well as in support of India's air power mission," the company said in a statement.

The company is one of the key contenders in the race for a mega contract to supply 114 fighter jets to Indian Air Force.

Last year, Lockheed Martin had exclusively offered its F-21 combat jet to India with a "Make in India" proposition.

In April 2019, the Indian Air Force issued an RFI (Request for Information) or initial tender to acquire 114 jets at a cost of around USD 18 billion, which is billed as one of the world's biggest military procurement in recent years.

https://www.oneindia.com/india/aero-india-2021-lockheed-martin-signs-pact-with-hindustan-aeronautics-limited-3213099.html

BW BUSINESSWORLD

Sat, 06 Feb 2021

Airbus military transport aircraft C295 is actually the first tangible Make in India program: Airbus president Rémi Maillard

On the Sidelines of Aero India 2021, BW Businesworld's Manish Kumar Jha interacts with Rémi Maillard, President & MD, India & South Asia, Airbus on defence and commercial commitment to India. Airbus is emphatic on its C 295 military transport aircraft program with Tata which is awaiting final approval. Rémi also proposed Airbus AS565 Panther helicopter to Indian Navy under NUH program which is in direct competition with India's advance helicopter platforms by DPSU HAL

By Manish Kumar Jha

We are going to talk about Airbus proposition to India. Airbus puts up a big show at Aero India 2021. What are you offering to Indian Armed Forces in terms of technology, new equipment, and hardware? Any such as interesting collaboration at Aero India?

There's a lot that is interesting, we are very excited to be at Aero India. We are displaying on our booths on our cutting edge innovations for both military aircraft and the helicopters all under the Make in India ambition. So we have the C 295, which is the most versatile and combat proven military transport platform that we're offering to the Indian Air Force together in partnership with Tata. This is very much a make in India program. This is actually the first tangible make in India program. We would install manufacturing capabilities and the final assembly line and testing capabilities here in India. So, we very much excited about this program, because we have Tata as our partner and we look forward to executing it.

So, Airbus has been focusing on C 295 military transport aircraft for a long time but the acquisition process is long delayed. Do you see this turning into a doable proposition? What is the status now?

We remain very much committed to this program, we are very much looking forward to supporting the Indian Air Force. We have a very strong and long standing relationship with the Indian forces and I'm just eager to further develop and enhance this condition shaping the future.

“We also discussing the 330 MRTT with the Indian Air Force. The MRTT stands for multirole tanker transport aircraft. Moreover, it's very easy to maintain and it is the reliable platform and this is the ideal complement of the fighter capability; you need this capability to fully leverage the Indian Air Force fighter capability.”

As far as rotary wing is concerned, IAF has been operating Airbus’ decade old helicopters like Chetak until now. I understand, Airbus is keen to offer its latest platforms to Indian navy for the naval utility helicopter (NUH) & multi role helicopter (NMRH). But having said that, India also has its own home grown robust platforms as advanced light helicopter from HAL. How do you differentiate your proposition in terms of technology?

“We are offering the Panther helicopter that you see on this platform. That's the perfect multi role platform.”

This is unique in terms of performance and missions and capabilities. We also in talk with the Indian Navy in form of strategic partnership together with Mahindra and again with C295, we are committed to install the final assembly line of the Panther here in India and this is a very unique value proposition. So not only it meets the highest operational requirements for the Navy, but also that's the perfect program to foster the creation of an aerospace ecosystem here in India.

Let's talk about the commercial aviation which is much impacted due to Covid19. With the hint of revival of the commercial aviation and uptick in travel industry, how is the Airbus' order book shaping up and what is the status of old orders?

It is true that with COVID we have been affected in the most practical way, but I think we adapted. It was not easy and this is not easy as we are far from being out of the wood. We have seen the aircraft's gradually recovering from basically nothing during the lockdown up to 60% of the COVID level in December last year. So 60% this is better than what we observe in most countries and regions.

But this is still far from a sustainable and comfortable situation. So we're not out of the woods. But we believe we could see an upswing this year, we still facing a lot of headwinds with the virus with the complexity of the situation. But we believe that in the midterm with the vaccination with people desire to fly again, we will have some time.

On demand and supply side, how hopeful are you on aviation industry taking off especially in this muted economic environment?

I think we have very cost efficient value proposition, we are confident that our products meet the operational requirements of the forces, we are confident that these products are the best value proposition for our customers.

"So, we delivered last year at Airbus level 566 aircraft. So, this is an excellent performance during COVID19, but this is 34% lower than the previous year in 2019. Out of the 566, a bit more than 10% was delivered to India, including 44 to Indigo that has become a top customer in terms of delivery price."

So moving forward, we remain cautiously optimistic and as I told you, we are ready for the potential upswing later this year.

http://www.businessworld.in/article/Airbus-Military-Transport-Aircraft-C295-Is-Actually-The-First-Tangible-Make-In-India-Program-Airbus-President-R-mi-Maillard/06-02-2021-374404/

the pioneer

Sat, 06 Feb 2021

China funding airbase near Gwadar to block oil supply from W Asia to India

New Delhi: China is funding development of an airbase near Gwadar port in Balochistan styled as Gwadar International airport for containing Indian Ocean Region (IOR) strategy of India and disrupting the oil supply lines from the Middle East to Indian shores.

The airbase will also help China in keeping an eye on Chabahar port of Iran where India has sanctioned USD 14 million for development of the port, sources tracking the development said.

The construction of the airbase began in January this year and the project is scheduled to be completed by the year end in December, they said.

The move, the sources further said, is also aimed at counterbalancing operationalisation of the Sukhoi base in Thanjavur, Tamil Nadu by India. The Thanjavur air base is used for patrolling the Indian Ocean and also conduct joint exercises with the Australian and Japanese air forces. The base also gives leverage to India in patrolling the sea lanes through fighter jets on the oil and goods business supply routes between the Gulf nations and China.

The under-construction Gwadar airbase is designed to land heavy military transport aircraft.

As of now, Gwadar airport is dubbed as a transport base for heavy lift aircraft and military landings have not been specifically outlined but such runways are also capable of facilitating fighter jets' landings.

The heavy military transport aircraft can also help Beijing in shipping men and military machines at short notice to check any major disruption in the China-Pakistan Economic Corridor (CPEC) that faces constant threat from the Baloch nationalists.

In the backdrop of the US administration under Joe Biden granting relaxations to sanctions clamped by his predecessor Donald Trump against Teheran, the Gwadar airbase can also be potentially exploited by the Iranians to smuggle in uranium and enrichment technology from China as there is no visa regime between Pakistan and Iran.

Amid India developing the Chabahar port in Iran which is close to the Gwadar port under Pakistani control, Beijing aims to counter Indian dominance in the IOR by keeping tabs on movements in the sea up to Mumbai where the ports receive hydrocarbon supplies from the Gulf countries.

To camouflage the Chinese game plan, the Gwadar airport is dubbed as a civilian facility while its construction is currently in full swing.

https://www.dailypioneer.com/2021/india/china-funding-airbase-near-gwadar-to-block-oil-supply-from-w-asia-to-india.html

Science & Technology News

The Indian EXPRESS

Sat, 06 Feb 2021

Brazilian, Indian startup satellite in ISRO's first mission in 2021 on Feb 28

The satellites are slated to be launched onboard the Polar Satellite Launch Vehicle (PSLV) C-51 at 10.28 am from the Sriharikota spaceport, over 100 kms from Chennai

Bengaluru: In its first mission in 2021, India's space agency ISRO planned to launch on February 28 Brazilian satellite Amazonia-1 and three Indian payloads, including one built by a home-grown start-up.

The satellites are slated to be launched onboard the Polar Satellite Launch Vehicle (PSLV) C-51 at 10.28 am from the Sriharikota spaceport, over 100 kms from Chennai.

Secretary in the Department of Space and Chairman of Bengaluru-headquartered ISRO (Indian Space Research Organisation) K Sivan confirmed the PSLV-C51 schedule to PTI on Friday.

ISRO planned to launch on February 28 Brazilian satellite Amazonia-1 and three Indian payloads, including one built by a home-grown start-up. (Twitter/ISRO, file)

Amazonia-1, reportedly the first earth observation satellite entirely developed by Brazil, is the primary payload.

'Anand', 'Satish Dhawan' satellite and 'UNITYsat' will be the co-passengers.

'Anand' is built by Indian space startup, Pixxel, and 'Satish Dhawan Satellite' by Chennai-based Space Kidz India.

UNITYsat is a combination of three satellites designed and built as a joint development by Jeppiaar Institute of Technology, Sriperumpudur (JITsat), G. H. Raisoni College of Engineering, Nagpur (GHRCEsat) and Sri Shakthi Institute of Engineering and Technology, Coimbatore (Sri Shakthi Sat).

“PSLV-C51 marks the launch of the countrys first commercial private remote-sensing satellite (Anand) on an ISRO PSLV rocket”, an ISRO official said.

Sivan had earlier described the upcoming mission as “special for us, special for the entire country” and beginning of a “new era of space (sector) reforms”.

Pixxel CEO, Awais Ahmed had said: “We are elated with the fact that Indias first commercial private satellite will now launch on an Indian rocket.This is not only a proud moment for us as an organisation but also as citizens to work with our nations capabilities”.

Bengaluru-based Pixxel has said it plans to build a constellation of 30 satellites by 2023.

The company inaugurated it’s new facility here last month.

According to Space Kidz India, Satish Dhawan satellite (SD SAT), named after former ISRO chairman Satish Dhawan, aimed to study space radiation and Magnetosphere and demonstrate the indigenously designed and developed nanosatellite components.

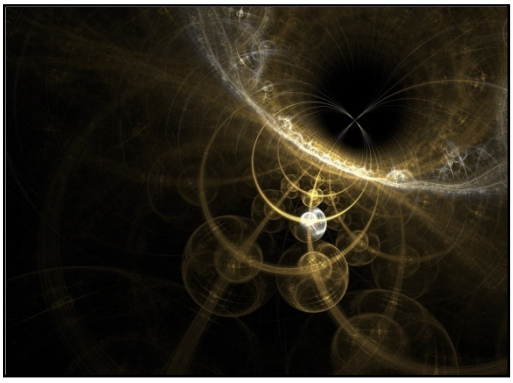
“The satellite also tests the capabilities of LoRa technology in Space which could be helpful for many applications in the future in short and M2M communication”, it said.

https://indianexpress.com/article/technology/brazilian-indian-startup-satellite-in-isros-first-mission-in-2021-on-feb-28-7176227/

Sat, 06 Feb 2021

Breakthrough in quantum photonics promises a new era in optical circuits

The modern world is powered by electrical circuitry on a "chip"—the semiconductor chip underpinning computers, cell phones, the internet, and other applications. In the year 2025, humans are expected to be creating 175 zettabytes (175 trillion gigabytes) of new data. How can we ensure the security of sensitive data at such a high volume? And how can we address grand-challenge-like problems, from privacy and security to climate change, leveraging this data, especially given the limited capability of current computers?



Credit: CC0 Public Domain

A promising alternative is emerging quantum communication and computation technologies. For this to happen, however, it will require the widespread development of powerful new quantum optical circuits; circuits that are capable of securely processing the massive amounts of information we generate every day. Researchers in USC's Mork Family Department of Chemical Engineering and Materials Science have made a breakthrough to help enable this technology.

While a traditional electrical circuit is a pathway along which electrons from an electric charge flow, a quantum optical circuit uses light sources that generate individual light particles, or photons, on-demand, one-at-a-time, acting as information carrying bits (quantum bits or qubits). These light sources are nano-sized semiconductor "quantum dots"-tiny manufactured collections of tens of thousands to a million atoms packed within a volume of linear size less than a thousandth of the thickness of typical human hair buried in a matrix of another suitable semiconductor.

They have so far been proven to be the most versatile on-demand single photon generators. The optical circuit requires these single photon sources to be arranged on a semiconductor chip in a regular pattern. Photons with nearly identical wavelength from the sources must then be released in

a guided direction. This allows them to be manipulated to form interactions with other photons and particles to transmit and process information.

Until now, there has been a significant barrier to the development of such circuits. For example, in current manufacturing techniques quantum dots have different sizes and shapes and assemble on the chip in random locations. The fact that the dots have different sizes and shapes mean that the photons they release do not have uniform wavelengths. This and the lack of positional order make them unsuitable for use in the development of optical circuits.

In recently published work, researchers at USC have shown that single photons can indeed be emitted in a uniform way from quantum dots arranged in a precise pattern. It should be noted that the method of aligning quantum dots was first developed at USC by the lead PI, Professor Anupam Madhukar, and his team nearly thirty years ago, well before the current explosive research activity in quantum information and interest in on-chip single-photon sources. In this latest work, the USC team has used such methods to create single-quantum dots, with their remarkable single-photon emission characteristics. It is expected that the ability to precisely align uniformly-emitting quantum dots will enable the production of optical circuits, potentially leading to novel advancements in quantum computing and communications technologies.

The work, published in *APL Photonics*, was led by Jiefei Zhang, currently a research assistant professor in the Mork Family Department of Chemical Engineering and Materials Science, with corresponding author Anupam Madhukar, Kenneth T. Norris Professor in Engineering and Professor of Chemical Engineering, Electrical Engineering, Materials Science, and Physics.

"The breakthrough paves the way to the next steps required to move from lab demonstration of single photon physics to chip-scale fabrication of quantum photonic circuits," Zhang said. "This has potential applications in quantum (secure) communication, imaging, sensing and quantum simulations and computation."

Madhukar said that it is essential that quantum dots be ordered in a precise way so that photons released from any two or more dots can be manipulated to connect with each other on the chip. This will form the basis of building unit for quantum optical circuits.

"If the source where the photons come from is randomly located, this can't be made to happen." Madhukar said.

"The current technology that is allowing us to communicate online, for instance using a technological platform such as Zoom, is based on the silicon integrated electronic chip. If the transistors on that chip are not placed in exact designed locations, there would be no integrated electrical circuit," Madhukar said. "It is the same requirement for photon sources such as quantum dots to create quantum optical circuits."

The research is supported by the Air Force Office of Scientific Research (AFOSR) and the U.S. Army Research Office (ARO).

"This advance is an important example of how solving fundamental materials science challenges, like how to create quantum dots with precise position and composition, can have big downstream implications for technologies like quantum computing," said Evan Runnerstrom, program manager, Army Research Office, an element of the U.S. Army Combat Capabilities Development Command's Army Research Laboratory. "This shows how ARO's targeted investments in basic research support the Army's enduring modernization efforts in areas like networking."

To create the precise layout of quantum dots for the circuits, the team used a method called SESRE (substrate-encoded size-reducing epitaxy) developed in the Madhukar group in the early 1990s. In the current work, the team fabricated regular arrays of nanometer-sized mesas with a defined edge orientation, shape (sidewalls) and depth on a flat semiconductor substrate, composed of gallium arsenide (GaAs). Quantum dots are then created on top of the mesas by adding appropriate atoms using the following technique.

First, incoming gallium (Ga) atoms gather on the top of the nanoscale mesas attracted by surface energy forces, where they deposit GaAs. Then, the incoming flux is switched to indium (In) atoms,

to in turn deposit indium arsenide (InAs) followed back by Ga atoms to form GaAs and hence create the desired individual quantum dots that end up releasing single photons. To be useful for creating optical circuits, the space between the pyramid-shaped nano-mesas needs to be filled by material that flattens the surface. The final chip where opaque GaAs is depicted as a translucent overlayer under which the quantum dots are located.

"This work also sets a new world-record of ordered and scalable quantum dots in terms of the simultaneous purity of single-photon emission greater than 99.5%, and in terms of the uniformity of the wavelength of the emitted photons, which can be as narrow as 1.8nm, which is a factor of 20 to 40 better than typical quantum dots," Zhang said.

Zhang said that with this uniformity, it becomes feasible to apply established methods such as local heating or electric fields to fine-tune the photon wavelengths of the quantum dots to exactly match each other, which is necessary for creating the required interconnections between different quantum dots for circuits.

This means that for the first time researchers can create scalable quantum photonic chips using well-established semiconductor processing techniques. In addition, the team's efforts are now focused on establishing how identical the emitted photons are from the same and/or from different quantum dots. The degree of indistinguishability is central to quantum effects of interference and entanglement, that underpin quantum information processing -communication, sensing, imaging, or computing.

Zhang concluded: "We now have an approach and a material platform to provide scalable and ordered sources generating potentially indistinguishable single-photons for quantum information applications. The approach is general and can be used for other suitable material combinations to create quantum dots emitting over a wide range of wavelengths preferred for different applications, for example fiber-based optical communication or the mid-infrared regime, suited for environmental monitoring and medical diagnostics," Zhang said.

Gernot S. Pomrenke, AFOSR Program Officer, Optoelectronics and Photonics said that reliable arrays of on-demand single photon sources on-chip were a major step forward.

"This impressive growth and material science work stretches over three decades of dedicated effort before research activities in quantum information were in the mainstream," Pomrenke said. "Initial AFOSR funding and resources from other DoD agencies have been critical in realizing the challenging work and vision by Madhukar, his students, and collaborators. There is a great likelihood that the work will revolutionize the capabilities of data centers, medical diagnostics, defense and related technologies."

More information: Jiefei Zhang et al, Planarized spatially-regular arrays of spectrally uniform single quantum dots as on-chip single photon sources for quantum optical circuits, *APL Photonics* (2020). DOI: 10.1063/5.0018422

https://phys.org/news/2021-02-breakthrough-quantum-photonics-era-optical.html

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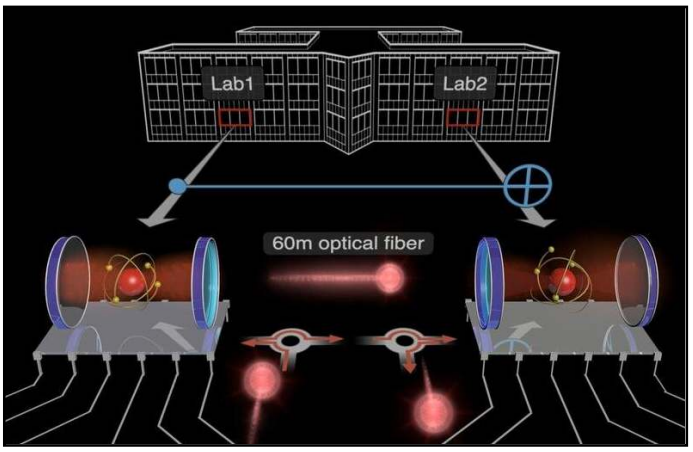
Sat, 06 Feb 2021

Quantum systems learn joint computing

Today's quantum computers contain up to several dozen memory and processing units, the so-called qubits. Severin Daiss, Stefan Langenfeld, and colleagues from the Max Planck Institute of Quantum Optics in Garching have successfully interconnected two such qubits located in different labs to a distributed quantum computer by linking the qubits with a 60-meter-long optical fiber. Over such a distance they realized a quantum-logic gate—the basic building block of a quantum computer. It makes the system the worldwide first prototype of a distributed quantum computer.



The two qubit modules (red atom between two blue mirrors) that have been interconnected to implement a basic quantum computation (depicted as light blue symbol) over a distance of 60 meters. The modules reside in different laboratories of the same building and are connected by an optical fiber. The computation operation is mediated by a single photon (flying red sphere) that interacts successively with the two modules. Credit: Stephan Welte/Severin Daiss, MPQ

The limitations of previous qubit architectures

Quantum computers are considerably different from traditional "binary" computers: Future realizations of them are expected to easily perform specific calculations for which traditional computers would take months or even years—for example in the field of data encryption and decryption. While the performance of binary computers results from large memories and fast computing cycles, the success of the quantum computer rests on the fact that one single memory unit—a quantum bit, also called "qubit"—can contain superpositions of different possible values at the same time. Therefore, a quantum computer does not only calculate one result at a time, but instead many possible results in parallel. The more qubits there are interconnected in a quantum computer; the more complex calculations it can perform.

The basic computing operations of a quantum computer are quantum-logic gates between two qubits. Such an operation changes—depending on the initial state of the qubits—their quantum mechanical states. For a quantum computer to be superior to a normal computer for various calculations, it would have to reliably interconnect many dozens, or even thousands of qubits for equally thousands of quantum operations. Despite great successes, all current laboratories are still struggling to build such a large and reliable quantum computer, since every additionally required qubit makes it much harder to build a quantum computer in just one single set-up. The qubits are implemented, for instance, with single atoms, superconductive elements, or light particles, all of which need to be isolated perfectly from each other and the environment. The more qubits are arranged next to one another, the harder it is to both isolate and control them from outside at the same time.

Data line and processing unit combined

One way to overcome the technical difficulties in the construction of quantum computers is presented in a new study in the journal *Science* by Severin Daiss, Stefan Langenfeld and colleagues from the research group of Gerhard Rempe at the Max Planck Institute of Quantum Optics in Garching. In this work supported by the Institute of Photonic Sciences (Castelldefels, Spain), the team succeeded in connecting two qubit modules across a 60-meter distance in such a way that they effectively form a basic quantum computer with two qubits. "Across this distance, we perform a quantum computing operation between two independent qubit setups in different laboratories,"

Daiss emphasizes. This enables the possibility to merge smaller quantum computers to a joint processing unit.

Simply coupling distant qubits to generate entanglement between them has been achieved in the past, but now, the connection can additionally be used for quantum computations. For this purpose, the researchers employed modules consisting of a single atom as a qubit that is positioned amidst two mirrors. Between these modules, they send one single light quanta, a photon, that is transported in the optical fiber. This photon is then entangled with the quantum states of the qubits in the different modules. Subsequently, the state of one of the qubits is changed according to the measured state of the "ancilla photon," realizing a quantum mechanical CNOT-operation with a fidelity of 80 percent. A next step would be to connect more than two modules and to host more qubits in the individual modules.

Higher performance quantum computers through distributed computing

Team leader and institute director Gerhard Rempe believes the result will allow to further advance the technology: "Our scheme opens up a new development path for distributed quantum computing." It could enable, for instance, to build a distributed quantum computer consisting of many modules with few qubits that are interconnected with the newly introduced method. This approach could circumvent the limitation of existing quantum computers to integrate more qubits into a single setup and could therefore allow more powerful systems.

More information: Severin Daiss et al. A quantum-logic gate between distant quantum-network modules, *Science* (2021). DOI: 10.1126/science.abe3150

Journal information: *Science*

https://phys.org/news/2021-02-quantum-joint.html

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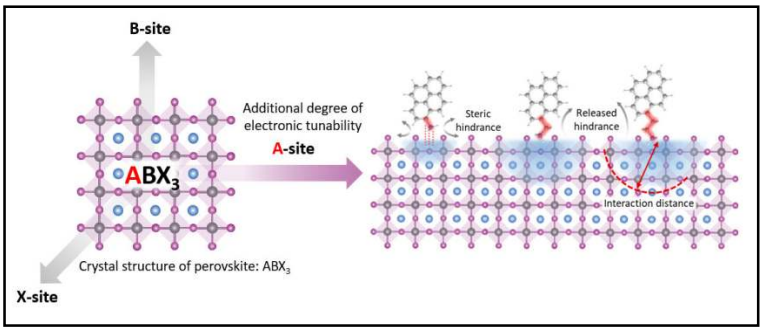
Sat, 06 Feb 2021

New way to power up nanomaterials for electronic applications

UCLA materials scientists and colleagues have discovered that perovskites, a class of promising materials that could be used for low-cost, high-performance solar cells and LEDs, have a previously unutilized molecular component that can further tune the electronic property of perovskites.

Named after Russian mineralogist Lev Perovski, perovskite materials have a crystal-lattice structure of inorganic molecules like that of ceramics, along with organic molecules that are interlaced throughout. Up to now, these organic molecules appeared to only serve a structural function and could not directly contribute to perovskites' electronic performance.



Schematic of perovskite material with organic molecules that can add to its electronic properties. Credit: Jingjing Xue and Rui Wang/UCLA Samueli School of Engineering

Led by UCLA, a new study shows that when the organic molecules are designed properly, they not only can maintain the crystal lattice structure, but also contribute to the materials' electronic properties. This discovery opens up new possibilities to improve the design of materials that will lead to better solar cells and LEDs. The study detailing the research was recently published in *Science*.

"This is like finding an old dog that can play new tricks," said Yang Yang, the Carol and Lawrence E. Tannas Jr. Professor of Engineering at the UCLA Samueli School of Engineering, who is the principal investigator on the research. "In materials science, we look all the way down to the atomic structure of a material for efficient performance. Our postdocs and graduate students didn't take anything for granted and dug deeper to find a new pathway."

In order to make a better-performing perovskite material, the researchers incorporated a specially designed organic molecule, a pyrene-containing organic ammonium. On its exterior, the positively charged ammonium molecule connected to molecules of pyrene—a quadruple ring of carbon atoms. This molecular design offered additional electronic tunability of perovskites.

"The unique property of perovskites is that they have the advantage of high-performance inorganic semiconductors, as well as easy and low-cost processability of polymers," said study co-lead author Rui Wang, a UCLA postdoctoral scholar in materials science and engineering. "This newly enhanced perovskite material now offers opportunities for improved design concepts with better efficiency."

To demonstrate perovskites' added effectiveness, the team built a photovoltaic (PV) cell prototype with the materials, and then tested it under continuous light for 2,000 hours. The new cell continued to convert light to energy at 85% of its original efficiency. This contrasts with a PV cell made of the same materials, but without the added altered organic molecule, which retained only 60% of its original efficiency.

More information: Jingjing Xue et al, Reconfiguring the band-edge states of photovoltaic perovskites by conjugated organic cations, Science (2021). DOI: 10.1126/science.abd4860

Journal information: Science

https://phys.org/news/2021-02-power-nanomaterials-electronic-applications.html

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Sat, 06 Feb 2021

Inductance based on a quantum effect has the potential to miniaturize inductors

Mobile-phone chargers and other devices could become much smaller after an all-RIKEN team of physicists successfully shrunk an electrical component known as an inductor to microscale dimensions using a quantum effect.

Inductors are a basic component of modern electrical circuits, and they are used in a wide range of applications including information processing, wireless circuits and chargers for mobile devices. They are based on the law of induction that English physicist Michael Faraday discovered in 1831. But while physics has made great leaps since then, the fundamental principles of inductors remain essentially the same—they are basically coils of wire.

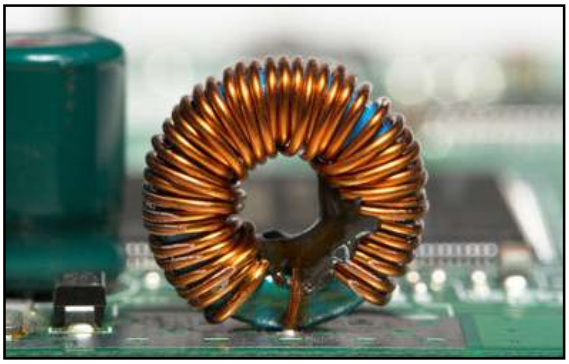


Figure 1: A conventional inductor mounted on a printed circuit board. Inductors have resisted miniaturization until now, but the demonstration of a quantum source of inductance by RIKEN researchers promises to result in much smaller inductors. Credit: GIPHOTOSTOCK / SCIENCE PHOTO LIBRARY

Unlike other electrical circuit components, inductors have been difficult to miniaturize because the size of their inductance diminishes with their volume, such that if you halve their volume, the inductance drops by half too.

Now, Yoshinori Tokura, Tomoyuki Yokouchi and their co-workers, all at the RIKEN Center for Emergent Matter Science, have generated an inductance equivalent to that of commercial inductors but in a component whose volume is about a million times smaller.

They achieved this by using a new mechanism for generating inductance that depends on quantum effects. Inductors based on this mechanism will be easy to shrink since their inductance actually increases with decreasing cross-sectional area.

"We discovered an electromagnetic inductance of quantum-mechanical origin," says Yokouchi. "This has big potential for the miniaturization of inductors, one of the most fundamental parts in contemporary electric circuits."

One of the authors, Naoto Nagaosa, had previously theoretically proposed a totally new mechanism for electromagnetic induction based on emergent electromagnetism, a new form of electromagnetism that arises from the quantum-mechanical properties of conduction electrons in specially engineered systems. In the present study, the team realized this effect by using a micrometer-scale magnet. The electron spins that give rise to the magnetism are arranged in spiral-like arrangement, mimicking the coils of a conventional inductor.

Yokouchi notes that the success of the study hinged on the collaborative environment at RIKEN. "Strong collaboration between theorists and experimentalists was essential for this project," he says. In particular, the experimentalists have a lot of expertise in fabricating advanced quantum materials. The team's nanoscale inductor operates only at very low temperatures, so they are now looking for materials that behave similarly at high temperatures. "For actual applications, we have to find a material generating emergent inductance at and above room temperature," says Yokouchi. "We have already started searching for the prospective materials."

More information: Tomoyuki Yokouchi et al. Emergent electromagnetic induction in a helical-spin magnet, *Nature* (2020). DOI: 10.1038/s41586-020-2775-x

Journal information: *Nature*

https://phys.org/news/2021-02-inductance-based-quantum-effect-potential.html

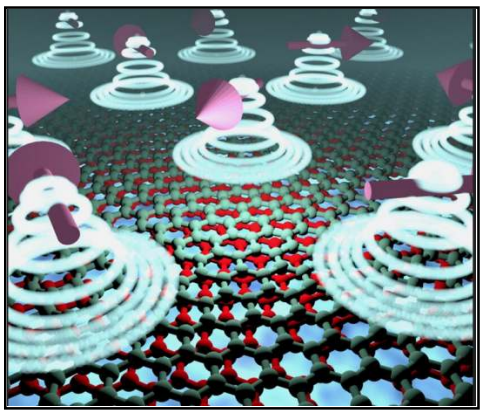
PHYS.ORG

Sat, 06 Feb 2021

A magnetic twist to graphene

Electrons in materials have a property known as 'spin," which is responsible for a variety of properties, the most well-known of which is magnetism. Permanent magnets, like the ones used for refrigerator doors, have all the spins in their electrons aligned in the same direction. Scientists refer to this behavior as ferromagnetism, and the research field of trying to manipulate spin as spintronics.

Down in the quantum world, spins can arrange in more exotic ways, giving rise to frustrated states and entangled magnets. Interestingly, a property similar to spin, known as "the valley," appears in graphene materials. This unique feature has given rise to the field of valleytronics, which aims to exploit the valley property for emergent physics and information processing, very much like spintronics relies on pure spin physics.



Schematic of a valley-spiral in magnetically encapsulated twisted bilayer graphene. Credit: Aalto University

"Valleytronics would potentially allow encoding information in the quantum valley degree of freedom, similar to how electronics do it with charge and spintronics with the spin." Explains Professor Jose Lado, from Aalto's Department of applied physics, and one of the authors of the

work. "What's more, valleytronic devices would offer a dramatic increase in the processing speeds in comparison with electronics, and with much higher stability towards magnetic field noise in comparison with spintronic devices."

Structures made of rotated, ultra-thin materials provide a rich solid-state platform for designing novel devices. In particular, slightly twisted graphene layers have recently been shown to have exciting unconventional properties, that can ultimately lead to a new family of materials for quantum technologies. These unconventional states which are already being explored depend on electrical charge or spin. The open question is if the valley can also lead to its own family of exciting states.

Making materials for valleytronics

For this goal, it turns out that conventional ferromagnets play a vital role, pushing graphene to the realms of valley physics. In a recent work, Ph.D. student Tobias Wolf, together with Profs. Oded Zilberberg and Gianni Blatter at ETH Zurich, and Prof. Jose Lado at Aalto University, showed a new direction for correlated physics in magnetic van der Waals materials.

The team showed that sandwiching two slightly rotated layers of graphene between a ferromagnetic insulator provides a unique setting for new electronic states. The combination of ferromagnets, graphene's twist engineering, and relativistic effects force the "valley" property to dominate the electrons behavior in the material. In particular, the researchers showed how these valley-only states can be tuned electrically, providing a materials platform in which valley-only states can be generated. Building on top of the recent breakthrough in spintronics and van der Waals materials, valley physics in magnetic twisted van der Waals multilayers opens the door to the new realm of correlated twisted valleytronics.

"Demonstrating these states represents the starting point towards new exotic entangled valley states." Said Professor Lado, "Ultimately, engineering these valley states can allow realizing quantum entangled valley liquids and fractional quantum valley Hall states. These two exotic states of matter have not been found in nature yet, and would open exciting possibilities towards a potentially new graphene-based platform for topological quantum computing."

The paper, "Spontaneous valley spirals in magnetically encapsulated twisted bilayer graphene" is published in the journal *Physical Review Letters*.

More information: Tobias M. R. Wolf et al. Spontaneous Valley Spirals in Magnetically Encapsulated Twisted Bilayer Graphene, *Physical Review Letters* (2021). DOI: 10.1103/PhysRevLett.126.056803

Journal information: *Physical Review Letters*

https://phys.org/news/2021-02-magnetic-graphene.html

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Sat, 06 Feb 2021

More patient deaths and fewer heart surgeries linked to 'Covid effect'

- ***The findings of the study were published in the journal 'The Annals of Thoracic Surgery'. The research was presented at the 57th Annual Meeting of The Society of Thoracic Surgeons***

Researchers during a new study have found a sharp decline in overall heart surgery volume and an unexplained increase in deaths after coronary artery bypass grafting, due to the effects of the ongoing COVID-19 health crisis.

The findings of the study were published in the journal 'The Annals of Thoracic Surgery'. The research was presented at the 57th Annual Meeting of The Society of Thoracic Surgeons.

"This study was a true herculean analysis and tour de force that showed the COVID effect on adult cardiac surgery volume, trends, and outcomes," said Tom C. Nguyen, MD, from the University of California San Francisco.

"The pandemic has changed the world as we know it, causing a dramatic drop in adult cardiac surgery volume and worsening patient outcomes," added Nguyen.

A medical worker wearing personal protective equipment (PPE) collects a swab sample at a Covid-19 testing center in Shanghai, China, on Saturday, Feb. 6, 2021. China remains on high alert and have discouraged travel during the Lunar New Year holiday that starts Feb. 11. Photographer: Qilai Shen/Bloomberg (Bloomberg)

Dr Nguyen and colleagues queried the STS Adult Cardiac Surgery Database from January 1, 2018, to June 30, 2020, and The Johns Hopkins COVID-19 Dashboard from February 1, 2020, to January 1, 2021.

The researchers examined data from 717,103 adult cardiac surgery patients and more than 20 million COVID-19 patients in an effort to determine how the pandemic affected adult cardiac surgery on national and regional levels.

"Only the STS National Database has the level of granularity, COVID variables, and longitudinal follow-up to answer the questions posed in this important study," said Dr Nguyen.

"Our research also analyzed data by regions to get an idea of how specific areas did during the COVID pandemic," added Dr Nguyen.

According to the study results, there was a 53 per cent decrease nationwide in all adult cardiac surgery volume when compared to 2019 and 65 per cent fewer elective cases in the United States. COVID also impacted non-elective cases, resulting in a 40 per cent decrease.

In addition, the data showed that no what matter the procedure--isolated coronary artery bypass grafting (CABG), isolated aortic valve replacement (AVR), isolated mitral valve replacement (MVR), CABG AVR, CABG MVR, isolated MV repair, and CABG MV repair--there was a significant decline in case volume, 54 per cent, as compared to 2019.

Regionally, the Mid-Atlantic area (New York, New Jersey, and Pennsylvania), was among those most affected by the COVID crisis, experiencing a 71 per cent decrease in overall case volume, 75 per cent fewer elective cases, and a 59 per cent reduction in non-elective cases. Another hotspot,

the New England region (Maine, Vermont, New Hampshire, Massachusetts, Connecticut and Rhode Island), showed a 63 per cent reduction in overall case volume.

The researchers also found that prior to the COVID surge, the Mid-Atlantic and New England regions had excellent outcomes with an observed-to-expected (O/E) ratio of less than 1, which represents a better-than-expected mortality rate. However, during the COVID surge, there was a 110 per cent increase in the O/E for all adult cardiac procedures and a 167 per cent increase for isolated CABG, meaning more patients were dying than expected.

Though the data did not directly address the cause of increased mortality, many surgeons say they currently are limited to operating on only the most urgent coronary bypass cases and patients who tend to be sicker.

"These numbers should not serve as a deterrent to patients seeking care for chest pain or other cardiac symptoms," said Robbin G. Cohen, MD, MMM, from Keck School of Medicine of the University of Southern California in Los Angeles, who was not directly involved with this study.

"If anything, they are a warning to get into the system as soon as possible," added G. Cohen.

At the time of the presentation, there were 95.4 million global cases of COVID-19 with more than 2 million global deaths. The US accounted for more than 24 million cases and approximately 400,000 deaths.

In the past year, this crisis has altered or halted virtually every aspect of society, and the practice of cardiothoracic surgery clearly has not been immune. The abrupt cessation of surgery in mid-March 2020 has proven to have had far-reaching implications, as the negative effects of cancelled and postponed procedures on patient health outcomes now are being realised.

"We clearly demonstrated that if you have heart surgery during COVID, you have an increased risk of morbidity and mortality. No doubt that COVID hit us hard," said Dr Nguyen.

According to Dr Nguyen, this study is only the first of many more "granular" analyses to come. The researchers plan to examine trends and outcomes of COVID patients vs. non-COVID patients, as well as delve more into the COVID effect on specific adult cardiac procedures such as aortic dissections.

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

https://www.livemint.com/news/india/more-patient-deaths-and-fewer-heart-surgeries-linked-to-covid-effect-11612603810013.html

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