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DRDO News

DRDO Technology News

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Ministry of Defence

Fri, 03 Sept 2021 12:41PM

India & US sign Project Agreement for Air-Launched Unmanned Aerial Vehicle

Key Highlights:

- ***Project Agreement signed between Ministry of Defence & US Department of Defence under Defence Technology & Trade Initiative***
- ***Significant step towards deepening defence technology cooperation between India & US***
- ***Outlines collaboration between Indian Air Force & DRDO towards design, development, demonstration, testing and evaluation of systems to co-develop ALUAV Prototype***

Ministry of Defence and US Department of Defence signed a Project Agreement (PA) for Air-Launched Unmanned Aerial Vehicle (ALUAV) under the Joint Working Group Air Systems in the Defence Technology and Trade Initiative (DTTI) on July 30, 2021. The PA for ALUAV falls under the Research, Development, Testing and Evaluation (RDT&E) Memorandum of Agreement between Ministry of Defence and US Department of Defence, which was first signed in January 2006 and renewed in January 2015. The agreement is a significant step towards deepening defence technology collaboration between the two nations through co-development of defence equipment.

The main aim of DTTI is to bring sustained leadership focus to promote collaborative technology exchange and create opportunities for co-production and co-development of future technologies for Indian and US military forces. Under DTTI, Joint Working Groups on land, naval, air, and aircraft carrier technologies have been established for focus on mutually agreed projects in respective domains. The PA for co-development of ALUAV has been overseen by the Joint Working Group on Air Systems and is a major accomplishment for DTTI.

The PA outlines the collaboration between Air Force Research Laboratory, Indian Air Force, and Defence Research and Development Organisation towards design, development, demonstration, testing and evaluation of systems to co-develop an ALUAV Prototype. The Aeronautical Development Establishment (ADE) at DRDO and the Aerospace Systems Directorate at the Air Force Research Laboratory (AFRL), along with the Indian and US Air Forces, are the principal organisations for execution of PA.

The agreement was signed by the co-chairs of the Joint Working Group Air Systems under DTTI, Assistant Chief of Air Staff for Plans Air Vice Marshal Narmdeshwar Tiwari from the Indian Air Force and Director, Air Force Security Assistance and Cooperation Directorate Brigadier General Brian R. Bruckbauer from the US Air Force.

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पत्र सूचना कार्यालय
भारत सरकार

रक्षा मंत्रालय

Fri, 03 Sept 2021 12:41PM

भारत और अमेरिका ने मानव रहित विमानों के सम्बंध में परियोजना-समझौते पर हस्ताक्षर किये

प्रमुख बिन्दुः

- *रक्षा प्रौद्योगिकी एवं व्यापार पहल के अंतर्गत भारत और अमेरिका के रक्षा मंत्रालयों के बीच परियोजना-समझौते पर हस्ताक्षर*
- *भारत और अमेरिका के बीच रक्षा प्रौद्योगिकी सहयोग बढ़ाने की दिशा में महत्त्वपूर्ण कदम*
- *ड्रोन सहित मानव रहित विमानों के प्रोटोटाइप को मिलकर विकसित करने के लिये डिजाइन, विकास, प्रदर्शन, परीक्षण और मूल्यांकन प्रणालियों के सम्बंध में भारतीय वायु सेना तथा रक्षा अनुसंधान एवं विकास परिषद (डीआरडीओ) के बीच सहयोग का ब्योरा*

भारत और अमेरिका के रक्षा मंत्रालयों ने मानव रहित विमानों (एयर-लॉच्ड अनमैन्ड एरियल व्हेकिल-एएलयूएवी) के सम्बंध में एक परियोजना-समझौते (पीए) पर हस्ताक्षर किये हैं। उल्लेखनीय है कि मानव रहित विमानों में ड्रोन आदि शामिल हैं। यह समझौता रक्षा प्रौद्योगिकी और व्यापार पहल (डीटीटीआई) के हवाले से संयुक्त वायु प्रणाली कार्य समूह के तहत 30 जुलाई, 2021 को किया गया। भारत और अमेरिका के रक्षा मंत्रालयों के बीच हुये अनुसंधान, विकास, परीक्षण और मूल्यांकन (आरडीटी-एंड-ई) समझौता-ज्ञापन के दायरे में एएलयूएवी को रखा गया है। इस समझौता-ज्ञापन पर सबसे पहले जनवरी 2006 में हस्ताक्षर किये गये थे और जनवरी 2015 को उसका नवीनीकरण किया गया था। यह समझौता रक्षा उपकरणों को मिलकर विकसित करने की दिशा में दोनों देशों के बीच रक्षा प्रौद्योगिकी सहयोग को और गहन बनाने की एक महत्त्वपूर्ण पहल है।

डीटीटीआई का मुख्य लक्ष्य है कि सहयोगात्मक प्रौद्योगिकी के आदान-प्रदान तथा भारत और अमेरिकी सेना के लिये भावी प्रौद्योगिकियों के सह-उत्पादन और सह-विकास पर लगातार जोर देना। डीटीटीआई के अंतर्गत थल, जल, वायु और विमान वाहक पोतों की प्रौद्योगिकियों के सम्बंध में एक संयुक्त कार्य समूह का गठन किया गया है, ताकि इन क्षेत्रो में आपसी चर्चा के बाद मंजूर होने वाली परियोजनाओं पर ध्यान दिया जा सके। एएलयूएवी के बारे में जो परियोजना-समझौता किया गया है, वह वायु प्रणालियों से जुड़े संयुक्त कार्य समूह के दायरे में आता है। यह डीटीटीआई की एक बड़ी उपलब्धि है।

परियोजना-समझौते में अमेरिका की एयरफोर्स रिसर्च लैबोरेट्री (एएफआरएल), भारतीय वायु सेना और रक्षा अनुसंधान एवं विकास संगठन के बीच सहयोग का खाका शामिल किया गया है। इसके तहत एएलयूएवी प्रोटोटाइप का डिजाइन तैयार किया जायेगा और उसका विकास, परीक्षण तथा मूल्यांकन किया जायेगा। डीआरडीओ में स्थित वैमानिकी विकास प्रतिष्ठान (एडीई) और एएफआरएल के तहत एयरोस्पेस सिस्टम्स डायरेक्टोरेट, भारतीय और अमेरिकी वायु सेना इस परियोजना-समझौते को क्रियान्वित करने वाले मुख्य संगठन हैं।

भारतीय वायु सेना की तरफ से उप वायुसेना प्रमुख (योजना) एयर वाइस मार्शल नरमदेश्वर तिवारी तथा अमेरिकी वायु सेना की तरफ से एयर फोर्स सेक्योरिटी असिस्टेंस एंड कोऑपरेशन डायरेक्टोरेट के निदेशक

బ్రిగెడియర్ జనరల్ బ్రాయన్ ఆర్. బ్రకబౌవర్ నె హస్తాక్షర్ కియె। ఉల్లెఖనీయ హై కి దోనొం అధికారీ డీటీటీఆఇ కె తహత్ గఠిత్ సంయుక్త్ కార్య సమూహ్ కె సహ-అధ్యక్ష్ హైం।

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రక్షణ మంత్రిత్వ శాఖ

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ఆకాశంలో ప్రయోగించగల మానవ రహిత ఏరియల్ వాహనం నిర్మాణం కోసం ఒప్పందంపై సంతకాలు చేసిన భారత్, యుఎస్

కీలకాంశాలుః

రక్షణ సాంకేతిక & వాణిజ్య చొరవలో భాగంగా ప్రాజెక్టు ఒప్పందంపై భారత రక్షణ మంత్రిత్వ శాఖ, యుఎస్ రక్షణ శాఖ

భారత్, యుఎస్‌ల మధ్య లోతైన రక్షణ సాంకేతిక సహకారం దిశగా కీలక అడుగు ఎఎల్‌యుఎవి (సాధారణ పరిభాషలో డ్రోన్ అనే వాహనం) నమూనాను కలిసి అభివృద్ధి చేస వ్యవస్థల రూపకల్పన , అభివృద్ధి, ప్రదర్శన, పరీక్ష, అంచనాల కోసం భారతీయ వైమానిక దళం & డిఆర్‌డిఒ మధ్య సహకారాన్ని వివరిస్తుంది.

రక్షణ సాంకేతిక, వాణిజ్య చొరవ లోని ఎయిర్ సిస్టమ్స్‌పై వర్కింగ్ గ్రూపు కింద ఆకాశంలోకి ప్రయోగించే మానవరహిత ఏరియల్ వాహనం (ఎఎల్‌యుఎవి) కోసం రక్షణ శాఖ, యుఎస్ రక్షణ శాఖ ప్రాజెక్టు ఒప్పందంపై జులై 30,2021న సంతకాలు చేశాయి. ఈ ఒప్పందం తొలుత జనవరి 2006లో రక్షణ శాఖ, యుఎస్ రక్షణ శాఖ మధ్య పరిశోధన, అభివృద్ధి, ప్రయోగం, అంచనా (ఆర్‌డిటి &ఇ) పై సంతకాలు చేసిన అవగాహనా ఒప్పందం పరిధిలోనిది. ఈ ఒప్పందాన్ని జనవరి 2015న పునరుద్ధరించారు. రక్షణ పరికరాలను కలిసి అభివృద్ధి చేయడం ద్వారా రెండు దేశాల మధ్య రక్షణ సాంకేతిక సహకారం మరింత గాఢమయ్యే దిశగా ఈ ఒప్పందం కీలక అడుగు. భారత్, యుఎస్ సైనిక దళాల కోసం భవిష్యత్ సాంకేతికతలను సహ అభివృద్ధి, సహ ఉత్పత్తికి అవకాశాలను సృష్టించడం, ఇరుదేశాల మధ్య సహకార సాంకేతికతను ప్రోత్సహించడం పై నాయకత్వ దృష్టి నిరంతరం ఉంచేలా చేయడం డిటిటిఐ ప్రధాన లక్ష్యం. డిటిటిఐ కింద, భూమి, నావికా, వైమానిక, విమాన వాహన నౌకల సాంకేతికతల పై సంయుక్త వర్కింగ్ గ్రూపులు ఏర్పాటు అయ్యాయి. ఆయా విభాగాలలో పరస్పరం అంగీకరించిన ప్రాజెక్టులపై దృష్టి పెట్టేందుకు ఈ గ్రూపులను ఏర్పాటు చేయడం జరిగింది. ఎఎల్‌యుఎవి సహ అభివృద్ధి కోసం చేసుకున్న ఆమోదిత ప్రాజెక్టును ఎయిర్ సిస్టంస్ పై సంయుక్త వర్కింగ్ గ్రూపు పర్యవేక్షించింది. ఇది డిటిటిఐ ప్రధాన విజయం. ఎఎల్‌యుఎవి (సాధారణ పరిభాషలో డ్రోన్ అనే వాహనం) నమూనాను కలిసి అభివృద్ధి చేస వ్యవస్థల రూపకల్పన , అభివృద్ధి, ప్రదర్శన, పరీక్ష, అంచనాల కోసం ఎయిర్‌ఫోర్స్ రీసెర్చ్ లాబొరేటరీ, భారతీయ వైమానిక దళం & డిఆర్

డిఒ మధ్య సహకారాన్ని ఆమోదిత ప్రాజెక్టు వివరిస్తుంది. ఆమోదిత ప్రాజెక్టు అమలుకు భారత, యుఎస్ వైమానిక దళాలతో కలిసి డిఆర్‌డిఒలోని ఏరోనాటికల్ డెవలప్‌మెంట్ ఎస్టాబ్లిష్‌మెంట్, ఎయిర్ ఫోర్స్ రీసెర్చ్ లాబొరేటరీ (ఎఎఫ్ఆర్ ఎల్) ఎయిరోస్పేస్ సిస్టంస్ డైరొక్టరేట్ ప్రధాన సంస్థలుగా ఉంటాయి. డిటిటిఐ కింద ఎయిర్ సిస్టంస్ సంయుక్త వర్కింగ్ గ్రూప్ సహ అధ్యక్షులు - భారతీయ వైమానిక దళానికి చెందిన ఎయిర్ వైస్ మార్షల్ నర్మదేశ్వర్ తివారీ, యుఎస్ వైమానిక దళం డైరెక్టర్, ఎయిర్ ఫోర్స్ సెక్యూరిటీ అసిస్టెన్స్ అండ్ డైరెక్టొరేట్ బ్రిగేడియర్ జనరల్ బ్రియాన్ ఆర్, బ్రక్‌బ్యూర్ ఈ ఒప్పందంపై సంతకాలు చేశారు.

https://pib.gov.in/PressReleasePage.aspx?PRID=1751709

ThePrint

Sun, 05 Sept 2021

Army, Navy, IAF sign deals for swarm, kamikaze drones amid govt push for new tech warfare

Leading the Services on new contracts signed is the Army which has inked three separate deals for various types of drones

By Snehesh Alex Philip

New Delhi: In a span of less than two weeks, the Indian Army, Navy and Air Force have signed multiple contracts worth over Rs 500 crore in the sphere of drone technology with the focus being on Indian companies amid Prime Minister Narendra Modi's push for adapting new technology of warfare.

The SkyStriker kamikaze drone | Photo: https://elbitsystems.com/product/skystriker/

The contracts signed by the Services include those for buying kamikaze drones or loitering munitions to swarm drones with both kill and surveillance capability besides counter drone systems.

Sources in the defence and security establishment told ThePrint that the directive from the "top" is very clear — focus on Indian companies.

They said the Prime Minister's Office has been pushing for adopting newer warfare technology, something which was seen during the Azerbaijan-Armenia conflict.

Sources termed the procurement of swarm drones and loitering munitions by the Army and Navy as a part of the 'Revolution in Military Affairs', known as RMA, which changes the way the war is fought.

Incidentally, all contracts are being signed under the emergency procurement route. Sources said this is because the process is faster and the aim right now is to support the domestic companies while they work on the upgraded variants.

Army signs maximum number of contracts

Leading the three Services on the new contracts signed is the Army, which has signed three separate deals for various types of drones.

This includes two deals worth over Rs 200 crore for Swarm drones with Indian start ups — Bengaluru-based NewSpace Research and Tech, run by former IAF officer Sameer Joshi, and Noida-based firm Raphe, sources said.

Both firms are Indian and not joint ventures with a foreign player.

The Army has also ordered over 100 tactical Indo-Israel kamikaze drones, used in the Azerbaijan-Armenia conflict, to beef up its operational capability along the borders with Pakistan and China.

These drones, which are to be supplied in 12 months, will be manufactured in Bengaluru by a joint venture between Israel's Elbit System and India's Alpha Design, which is now part of the Adani Group.

The Navy has also placed a large order with an Indian joint venture firm for specialised drones, the sources said.

The force had also placed an order with defence PSU Bharat Electronics Limited (BEL) for the supply of Naval Anti Drone System (NADS), developed by the Defence Research and Development Organisation (DRDO).

The Indian Air Force, which is looking at larger tactical drones, has signed up a deal with Indian firm Zen Technologies for counter unmanned aerial systems.

Swarm drones and loitering munition, the way ahead

The order placed with New Space Research and Tech is for drones that can hit targets with five to 10 kilograms of explosives while also being used for surveillance and for carrying urgent medical and other supplies to the troops.

The capability of these drones was showcased earlier this year during the Army Day parade at Delhi Cantonment.

A swarm of 75 drones, developed by the Army and NewSpace Research and Tech, had then showcased offensive capability by carrying out a simulated kamikaze attack on targets, including enemy tanks, fuel depots, terror hideout and radar positions, among others.

The Army had then termed the system a "disruption technology", which can hit targets 50 km inside enemy territory.

The company had come first in the Army's swarm drone evaluation trials at Ahmednagar, Maharashtra earlier this year. Incidentally, the algorithm used by the 2018 start-up for its drones is of Indian origin.

The company which came second — Raphe — has also been given over Rs 100 crore swarm drones contract, mainly for surveillance and load carrying capacity.

The quadcopter drones, capable of carrying multiple weights of payload, were shown delivering medical aids and para-dropping essential supplies to showcase that the system can be used to support troops deployed in harsh and forward positions.

The Army had then announced that a total of 600 kg supplies can be delivered by these drones.

The plan right now, according to sources, is to bring out more complex and upgraded versions in the future, which could then be part of a larger procurement process.

Each of the three Services is also focusing on loitering munition which changes the warfare dynamics. These loitering munitions are of different types – both for long range and tactical operations.

https://theprint.in/defence/army-navy-iaf-sign-deals-for-swarm-kamikaze-drones-amid-govt-push-for-new-tech-warfare/727913/

INDIA TODAY

Sat, 04 Sept 2021

Indian Army, Navy, Air Force sign deal for inducting DRDO-developed anti-drone system

The Indian Army, Navy, and Air Force signed an agreement on Friday to acquire DRDO-developed anti-drone systems

By Manjeet Negi

New Delhi: In order to have protection against drone attacks, all the three defence forces including the Army, Navy and Air Force have signed contracts for acquiring DRDO-developed anti-drone systems.

The Naval Anti-Drone System is the Indian Armed Forces' first indigenously built anti-drone system (Photo: Indian Navy)

"All three services Army, Navy and Air force have signed a contract with Navratna Defence PSU Bharat Electronics Limited (BEL) for the supply of the first indigenous comprehensive anti-Drone System with both hard-kill and soft kill capabilities in New Delhi on August 31, 2021," defence officials told India Today.

The contract was signed in the presence of senior armed force officers and DRDO representatives. Indian armed forces have provided consistent support and have led in the joint development of the anti-drone system with the Defence Research and Development Organisation (DRDO) and BEL. Anti-Drone systems are offered by the manufacturers in static and mobile versions.

Multiple DRDO Labs, namely Electronics and Radar Development Establishment (LRDE), Bangaluru, Defence Electronics Research Laboratory (DLRL) and Centre for High Energy Systems and Sciences (CHESS), Hyderabad and Instruments Research and Development Establishment (IRDE) Dehradun four Units of BEL, namely Bengaluru, Hyderabad, Pune and Machilipatanam in close collaboration with the armed forces, were involved in the making of this fully indigenous system, as part of the Atmanirbar Bharat initiative to counter drone threats of adversaries.

The D4 system can instantly detect and jam micro drones and use a laser-based kill mechanism to terminate targets. It will be an effective all-encompassing counter to the increased drone threat to strategic naval installations.

The DRDO's RF/Global Navigation Satellite System (GNSS) detects the frequency which is being used by the controller and the signals are then jammed. The system provides both 'soft kill' and 'hard kill' options to the Indian Armed Forces to tackle fast-emerging aerial threats.

Both the static and mobile versions of D4S will be supplied to the Indian defence forces within a short time from the signing of the contract. BEL hopes to get further order from the Ministries of Defence and Home Affairs.

https://www.indiatoday.in/india/story/indian-army-navy-air-force-sign-deal-inducting-drdo-developed-anti-drone-system-1849097-2021-09-04

जागरण

Sat, 04 Sept 2021

सशस्त्र बलों को जल्द मिलेगा एंटी ड्रोन सिस्टम, DRDO के साथ तीनों सेनाओं ने किया समझौता

जम्मू एयरबेस पर ड्रोन द्वारा किए गए हमले के बाद एंटी ड्रोन सिस्टम की आवश्यकता महसूस हुई और इसलिए DRDO के साथ तीनों सेनाओं ने समझौता किया। इसके बाद जल्द ही देश के सशस्त्र बल के पास यह सिस्टम उपलब्ध होगा।

By Monika Minal

नई दिल्ली: ड्रोन हमलों के खिलाफ सुरक्षा को लेकर देश की तीनों सेना- आर्मी, नेवी और एयरफोर्स ने मिलकर रक्षा अनुसंधान और विकास संगठन (DRDO) द्वारा विकसित एंटी ड्रोन सिस्टम के लिए समझौता किया है। यह देश में विकसित किया गया पहला एंटी ड्रोन सिस्टम है। समझौते को 31 अगस्त को अंतिम रूप दिया गया, जो रक्षा मंत्रालय की तरफ से आपातकालीन अनुबंधों के तहत इसको पूरा करने की अंतिम तारीख थी।

ड्रोन हमलों से सुरक्षा के लिए तीनों रक्षा बलों सेना, नौसेना और वायु सेना ने DRDO की तरफ से विकसित एंटी ड्रोन सिस्टम को खरीदने के सौदों पर हस्ताक्षर किए हैं। इस दौरान सेना के सभी वरिष्ठ अधिकारी व DRDO के प्रतिनिधि मौजूद थे। बता दें कि ड्रोन के माध्यम से जम्मू एयरबेस में विस्फोटक गिराए जाने की घटना के बाद इन एंट्री-ड्रोन सिस्टम की आवश्यकता महसूस की गई थी जिसमें दो से तीन छोटे ड्रोन का इस्तेमाल जम्मू एयरबेस पर विस्फोटक गिराने के लिए किया गया था।

DRDO द्वारा विकसित और भारत इलेक्ट्रानिक लिमिटेड (BEL) द्वारा बनाए गए ड्रोन डिटेक्ट, डिटर एंड डिस्ट्राय सिस्टम (डी4एस) भारतीय सशस्त्र बलों में शामिल होने वाला पहला स्वदेशी रूप से विकसित एंटी ड्रोन सिस्टम है। भारतीय सशस्त्र बलों की ओर से इसके लिए लगातार समर्थन दिया गयाा। साथ ही सेना ने DRDO और BEL के साथ एंटी-ड्रोन सिस्टम के संयुक्त विकास में नेतृत्व किया है। DRDO ने बताया है कि D4 सिस्टम माइक्रो ड्रोन का तुरंत पता लगाने के बाद इसे जाम कर सकता है। यह सिस्टम लक्ष्यों को नष्ट करने के लिए एक लेजर-आधारित मार तंत्र का उपयोग कर सकता है।

हवाई खतरों से निपटने के लिए सशस्त्र सेना को इस सिस्टम के जरिए 'सॉफ्ट किल' और 'हार्ड किल' दोनों ही विकल्प होंगे। जल्द ही भारतीय रक्षा बलों के पास D4S के स्थिर और मोबाइल वेरिएंट की आपूर्ति की जाएगी। बीईएल को रक्षा और गृह मंत्रालय से और आदेश मिलने की उम्मीद है।

https://www.jagran.com/news/national-army-navy-air-force-sign-deal-for-inducting-drdo-developed-anti-drone-system-21988973.html

INDIA TODAY

Sat, 04 Sept 2021

Armed forces order Indian-made anti-drone systems worth over Rs 300 crore, more contracts awaited

The latest among the contracts is the Indian Air Force placing an order worth Rs 155 crore for anti-drone platforms or Counter Unarmed Aircraft System

By Abhishek Bhalla

New Delhi: The drone attack on the Jammu Air Force Station on June 27 was a rude wake-up call for India to relook at existing options and enhance its anti-drone capabilities for unmanned warfare.

In a series of orders, the armed forces have given contracts to Indian companies for a Made in India counter-drone system called Counter Unarmed Aircraft System (CUAS).

Apart from the Indian Navy and Indian Air Force (IAF), other security agencies are also looking at immediately procuring the indigenous anti-drone capabilities without further delay.

The system comes in two versions — mobile and static — and both platforms will be available with the Indian Navy to secure its onshore installations.

The systems being developed and given to the forces have both 'soft kill' and 'hard kill' capabilities. Soft kill refers to jamming the incoming drone rendering it ineffective, while a hard kill completely destroys the drone with a direct hit.

Drone attacks are a cheap and easy option for which India needs to be better prepared. Experts feel that since the use of drones is rapidly growing, technology methods to combat them are also evolving.

Rs 155 crore anti-drone system contract from IAF

The latest among the contracts is the IAF placing an order worth Rs 155 crore for anti-drone platforms or Counter Unarmed Aircraft System.

The contract was bagged by Hyderabad-based Zen Technologies that will supply the system within a year. “This is Zen Technologies' first significant order in the anti-drone space, and the company remains confident of securing additional orders in the future,” a statement from the company said.

Ashok Atluri, managing director and CFO of Zen Technologies, said, “This is a significant step towards making India a drone and counter-drone technology export hub. These orders placed with Indian companies can have a multiplier effect on the Indian equipment manufacturers eco-system because products like anti-drone systems have a high export potential to friendly foreign countries. Anti-drone systems and training solutions are in high demand in many countries.”

Naval Anti Drone System

The IAF’s contract comes soon after the Indian Navy inked a contract with Bharat Electronics Limited (BEL) for India’s indigenous Naval Anti Drone System (NADS).

“The Naval Anti Drone System can instantly detect and jam micro drones and uses a laser-based kill mechanism to terminate targets. It will be an effective, all-encompassing counter to the increased drone threat to strategic naval installations,” a statement from the Ministry of Defence said.

The anti-drone system was first deployed to provide security cover for the Republic Day parade this year and later during the Prime Minister's Independence Day address to the nation.

The system, which offers 360-degree coverage, was also deployed in Ahmedabad for the Modi-Trump roadshow. The system comes in two versions — mobile and static — and both platforms will be available with the Indian Navy to secure its onshore installations. “This will be deployed for all critical assets, including navy’s airfields that have air assets,” an official told India Today.

With the help of radar, electro-optical/infrared sensors and radio frequency detectors, the drones can be detected and jammed. The DRDO’s RF/Global Navigation Satellite System (GNSS) detects the frequency which is being used by the controller and the signals are then jammed.

“The anti-drone technology system of DRDO provides for both 'soft kill' and 'hard kill' options to the Indian Armed Forces to tackle fast-emerging aerial threats. Both the static and mobile versions of NADS will be supplied to the Indian Navy within a short time from the signing of the contract,” the Ministry of Defence said.

IAF’s anti-drone requirements

The Indian Air Force (IAF) wants 10 anti-drone systems armed with laser-directed energy weapons to bring down rogue drones. The Request for Information (RFI) was issued a day after the attack on the Jammu Air Force Station, where Unmanned Aerial Vehicles (UAVs) were used to drop bombs.

"It should provide a multi-sensor, multi-kill solution to enforce effective no-fly zones for unmanned aircraft while inflicting minimal collateral damage to the surrounding environment. It should generate a composite air situational picture for the operator and generate alerts based on user-defined parameters,” the requirements in the RFI said.

Among the other specifications, it mentions that the radar should have 360-degree coverage with a range of 5 km for a mini unmanned aircraft system.

The platform should be mounted on indigenous vehicles with cross-country capability and powered by an indigenous Electrical Power Supply (EPS) system. The counter unmanned aircraft systems should have provision for dismounting of all sub-systems, including integral power solution from the vehicle and mounting on rooftop/ open ground.

DRDO developed an Indian anti-drone system

The Defence Research and Development Organisation (DRDO) has developed an anti-drone technology to detect, intercept and shoot down drones. The transfer of technology has happened with BEL, while some other companies are also being considered.

The DRDO had deployed the system last year during events like Republic Day, but many feel that for 24x7 monitoring in hostile territory, the system needs to be further tested.

The system is developed to jam drones up to 3 km and can bring down targets using a laser weapon at targets that are one to two kilometres away.

There are options from the private industry as well that need to be closely studied. Hyderabad-based Grene Robotics said that it has developed India’s own drone dome ‘Indrajaal’ that can guard against drone threats.

Israeli SMASH 2000

The SMASH 2000 system is fitted on a rifle and can be used to bring down drones. The Israeli system recognises, tracks and engages targets in the air with precision.

While the Indian Navy has already opted for the Israeli anti-drone Smash rifles, the Jammu attack is a reality check for other forces to bring in similar capabilities to guard against drone attacks. The Indian Army and Border Security Forces are also looking at getting the weapon to enhance their on-ground anti-drone capabilities.

The Israeli and US forces are among those who are using the system that can track and hunt down multiple targets. Developed by the Israeli company Sharpshooter, the SMASH system allows any soldier on the ground to be equipped with anti-drone capabilities as the system can be easily mounted on rifles.

https://www.indiatoday.in/india/story/armed-forces-order-indian-made-anti-drone-systems-worth-rs-155-crore-1848915-2021-09-03

Hindustan Times

Sat, 04 Sept 2021

Exclusive | India's 1st N-missile tracking ship Dhruv to be launched on Sept 10

The 10,000-tonne ship has the ability to track nuclear ballistic missiles at a long-range and is at the heart of India's anti-ballistic missile capability

By Shishir Gupta

New Delhi: National Security Advisor Ajit Doval is expected to commission India's first satellite and ballistic missile tracking ship Dhruv from Visakhapatnam on September 10. Built by Hindustan Shipyard in collaboration with Defence Research and Development Organisation (DRDO) and National Technical Research Organisation (NTRO), INS Dhruv has the capability to also map ocean beds for research and detection of enemy submarines.

The nuclear missile tracking ship will be manned by Indian Navy personnel with the Strategic Forces Command. (File Photo)

It is understood that the Chief of Naval Staff Admiral Karambir Singh and NTRO Chairman Anil Dasmana will be present at the launch ceremony along with senior DRDO and Navy officials. The nuclear missile tracking ship will be manned by Indian Navy personnel with the Strategic Forces Command (SFC). Such ships are operated by France, the US, the UK, Russia, and China only.

The 10,000-tonne ship, which is part of a classified project, will be at the heart of India's future anti-ballistic missile capability as it will act as an early warning system for enemy missiles headed towards Indian cities and military establishments. The ship will be a vital key to maritime domain awareness in the Indo-Pacific and is being commissioned at the time when the era of underwater armed and surveillance drones has dawned.

With both China and Pakistan having nuclear ballistic missile capability and land disputes with India, the INS Dhruv will act as a major force multiplier to India's maritime security architecture as well add to the capability to understand the true missile capability of the adversary when they test their ballistic missiles.

INS Dhruv is equipped with DRDO developed state of the art active scanned array radar or AESA with the ability to scan various spectrums to monitor spy satellites watching over India as well as monitor missile tests in the entire region. This will add to the Indian Navy's capability to monitor the region from the Gulf of Aden to the ingress routes to the South China Sea via Malacca, Sunda, Lombok, Ombai and Wetar straits.

INS Dhruv by mapping the Indian Ocean bed will also help the Indian Navy plan better military operations in all three dimensions—sub-surface, surface and aerial. Given that China has moved to sea-based military doctrine with huge investments in long-range aircraft carriers, warships and submarines, the latest Indian ship will help India's electronic intelligence-gathering spy agency, the NTRO, to project threat to India in real-time.

https://www.hindustantimes.com/india-news/india-s-1st-n-missile-tracking-ship-dhruv-to-be-launched-on-sept-10-101630647404445.html

THE TIMES OF INDIA

Sat, 04 Sept 2021

India set to deploy long-range missile tracking ship

By Rajat Pandit

New Delhi: India is finally set to deploy its first specialized research ship to track incoming nuclear-tipped ballistic missiles and aircraft at long ranges as well as monitor low earth orbit (LEO) satellites, in a major boost to the country's early-warning military capabilities. The indigenously-built 15,000-tonne missile range instrumentation ship, packed with long-range radars, dome-shaped tracking antennae and advanced electronics, will be commissioned as INS Dhruv in the presence of national security advisor Ajit Doval and Navy chief Admiral Karambir Singh at Visakhapatnam on September 10, said sources.

India's first missile tracking ship in Visakhapatnam (File photo)

The development comes at a time when a similar Chinese vessel is currently prowling in the Indian Ocean Region (IOR) on yet another surveillance and monitoring mission. China regularly sends such ships and survey vessels to the IOR to map oceanographic and other data useful for navigation and submarine operations, among other purposes.

With INS Dhruv, India joins a select group of countries like the US, Russia, China and France to have such specialized vessels. The 175-meter-long missile-tracking vessel, earlier codenamed `VC 11184' as part of a classified project, has been under-construction at the Hindustan Shipyard Ltd at Vizag since 2013-2014, as was earlier reported by TOI.

The ship, which will be manned by personnel from the Navy, National Technical Research Organisation (NTRO) and Defence Research and Development Organization (DRDO), has become ready for commissioning after a battery of tests over the last couple of years.

"INS Dhruv is a huge ship, with a wide array of advanced technical equipment and even a helicopter deck. It will act as an early-warning system on the high seas to detect and track hostile ballistic missiles, with even multiple manoeuverable warheads, launched from land or submarines against Indian mainland targets," said a source.

Once such incoming missiles are detected by the radars on board the ship, land-based ballistic missile defence (BMD) systems can take over to track and shoot them down. The two-tier BMD system currently being developed by DRDO has AAD (advanced air defence) and PAD (Prithvi air defence) interceptor missiles to intercept enemy missiles in the 2,000-km class.

INS Dhruv, with such powerful sensors, can also be used to monitor LEO satellites being used by an adversary for military reconnaissance, spying and communications if required, said the source.

INS Dhruv, of course, will help in monitoring the flight trajectories and telemetry data of the Agni land-based missiles as well as the `K' series of submarine-launched ballistic missiles launched by India during trials.

https://timesofindia.indiatimes.com/india/india-set-to-deploy-long-range-missile-tracking-ship/articleshow/85909605.cms

नवभारत टाइम्स

Sat, 04 Sept 2021

चीन-पाकिस्तान की हर चाल पर होगी नजर, देश के पहले न्यूक्लियर मिसाइल ट्रैकिंग जहाज की होगी तैनाती

स्वदेश निर्मित 15,000 टन मिसाइल रेंज इंस्ट्रूमेंटेशन जहाज को लंबी दूरी के राडार, गुंबद के आकार के ट्रैकिंग एंटीना और एडवांस इलेक्ट्रॉनिक्स सिस्टम से लैस किया गया है। 175 मीटर लंबी मिसाइल-ट्रैकिंग पोत को पहले एक सीक्रेट प्रोजेक्ट के हिस्से के रूप में 'वीसी 11184' नाम दिया गया था।

By Rajat Pandit

हाइलाइट्स

- *आईएनएस ध्रुव का एनएसए और नेवी चीफ की मौजूदगी में 10 सितंबर हो सकती है तैनाती*
- *बैलिस्टिक मिसाइलों का पता लगाने के साथ ही अर्ली अलर्ट सिस्टम के रूप में कार्य करेगा*
- *अमेरिका, रूस, चीन और फ्रांस जैसे देशों के चुनिंदा समूह शामिल हो जाएगा भारत*

नई दिल्ली: भारत जल्द ही देश के पहले लंबी दूरी की न्यूक्लियर मिसाइल व हवाई हमलों की निगरानी वाले जहाज आईएनएस ध्रुव की तैनाती करने जा रहा है। यह स्पेशल रिसर्च शिप दुश्मन के मिसाइल को ट्रैक करने के साथ ही पृथ्वी की निचली कक्षा में सैटेलाइटों की निगरानी भी करेगी। टाइम्स ऑफ इंडिया की खबर के अनुसार सूत्रों के हवाले से जानकारी है कि राष्ट्रीय सुरक्षा सलाहकार अजीत डोभाल और नौसेना प्रमुख एडमिरल करमबीर सिंह की उपस्थिति में 10 सितंबर को इसे आईएनएस ध्रुव के रूप में कमीशन किया जाएगा।

15,000 टन मिसाइल रेंज इंस्ट्रूमेंटेशन की शिप

स्वदेश निर्मित 15,000 टन मिसाइल रेंज इंस्ट्रूमेंटेशन जहाज को लंबी दूरी के राडार, गुंबद के आकार के ट्रैकिंग एंटीना और एडवांस इलेक्ट्रॉनिक्स सिस्टम से लैस किया गया है। 175 मीटर लंबी मिसाइल-ट्रैकिंग पोत को पहले एक सीक्रेट प्रोजेक्ट के हिस्से के रूप में 'वीसी 11184' नाम दिया गया था। इस शिप की तैनाती ऐसे समय में हो रही है जब ऐसा ही एक चीनी पोत वर्तमान में हिंद महासागर क्षेत्र (आईओआर) में एक और निगरानी और निगरानी मिशन पर चल रहा है।

अमेरिका, रूस, चीन और फ्रांस के क्लब में भारत

चीन नियमित रूप से हिंद महासागर क्षेत्र में ऐसे जहाजों और सर्वे शिप को भेजता है। इनका उपयोग नेविगेशन और पनडुब्बी संचालन के लिए उपयोगी समुद्री विज्ञान और अन्य डेटा का पता लगाने में भी किया जाता है। स्पेशल पोत आईएनएस ध्रुव के साथ ही भारत अमेरिका, रूस, चीन और फ्रांस जैसे देशों के एक चुनिंदा समूह में शामिल हो जाएगा।

नेवी की एनटीआरओ टीम करेगी संचालित

आईएनएस ध्रुव को नेवी की नेशनल रिसर्च टेक्निकल ऑर्गनाइजेशन (एनटीआरओ) और रक्षा अनुसंधान और विकास संगठन (DRDO) के मेंबर संचालित करेंगे। आईएनएस ध्रुव पर एडवांस टेक्निकल इक्यूपमेंट्स की एक बड़ी रेंज है। साथ ही इस पर एक हेलीकॉप्टर डेक भी है। यह दुश्मनों के बैलिस्टिक मिसाइलों का पता लगाने और ट्रैक करने के लिए समुद्र पर एक अर्ली अलर्ट सिस्टम के रूप में कार्य करेगा। यह जमीन से छोड़े गए कई वारहेड्स के साथ या पनडुब्बियों को भी निशाना बना सकता है।

मिसाइल का पता लगा बीएमडी को देगा सूचना

एक बार शिप के राडार पर इस तरह की आने वाली मिसाइलों का पता लगने के बाद, लैंड बेस्ड बैलिस्टिक मिसाइल रक्षा (बीएमडी) सिस्टम उन्हें ट्रैक कर मार गिराएगा। वर्तमान में DRDO की तरफ से विकसित की जा रही दो स्तरीय BMD प्रणाली में 2,000 किलोमीटर की रेंज में दुश्मन की मिसाइलों को रोकने के लिए AAD (उन्नत वायु रक्षा) और PAD (पृथ्वी वायु रक्षा) इंटरसेप्टर मिसाइल हैं। ऐसे शक्तिशाली सेंसर के साथ INS ध्रुव का भी उपयोग किया जा सकता है।

https://navbharattimes.indiatimes.com/india/india-set-to-deploy-first-long-range-missile-specialized-research-tracking-ship-ins-dhruva/articleshow/85918481.cms

दैनिक भास्कर

Mon, 06 Sept 2021

भास्कर एक्सप्लेनर: समुद्र से दुश्मन देशों की मिसाइल पर नजर रखेगा भारत का 'ध्रुव', जानिए भारत के लिए क्यों खास है मिसाइल ट्रैकिंग शिप

भारत की समुद्र में ताकत बढ़ने वाली है। 10 सितंबर को भारत का पहला मिसाइल ट्रैकिंग शिप 'ध्रुव' लॉन्च होने जा रहा है। न्यूक्लियर और बैलेस्टिक मिसाइल को ट्रैक करने वाला ये भारत का पहला जहाज है। ध्रुव की लॉन्चिंग के साथ ही भारत इस तकनीक से लैस दुनिया का 5वां देश बन जाएगा। फिलहाल केवल अमेरिका, फ्रांस, रूस और चीन के पास ही ये तकनीक है।

10 सितंबर को विशाखापट्टनम में नेशनल सिक्योरिटी एडवाइजर (NSA) अजीत डोभाल ध्रुव को लॉन्च करेंगे।

समझते हैं, मिसाइल ट्रैकिंग शिप क्या होते हैं? ध्रुव की क्या खासियत है? कितने देशों के पास मिसाइल ट्रैकिंग शिप है और भारतीय नेवी के लिए यह कितना अहम है...

सबसे पहले समझिए मिसाइल ट्रैकिंग शिप क्या होते हैं?

आसान भाषा में समझें तो ऐसी शिप जो किसी मिसाइल को ट्रैक कर सकती है। इन शिप में ऐसे रडार और एंटीना लगे होते हैं, जो किसी भी मिसाइल और रॉकेट को ट्रैक कर सकते हैं। मिलिट्री में इनका इस्तेमाल दुश्मन देश की मिसाइल को ट्रैक करने के लिए किया जाता है।

ट्रैकिंग शिप बनाने का कॉन्सेप्ट सबसे पहले अमेरिका ने शुरू किया था। अमेरिका ने अपने मिसाइल प्रोग्राम को सपोर्ट करने के लिए दूसरे विश्वयुद्ध के बाद बचे हुए जहाजों को ट्रैकिंग शिप का रूप दे दिया था। अमेरिका ने उसके बाद से ही 25 से ज्यादा ट्रैकिंग शिप बनाए।

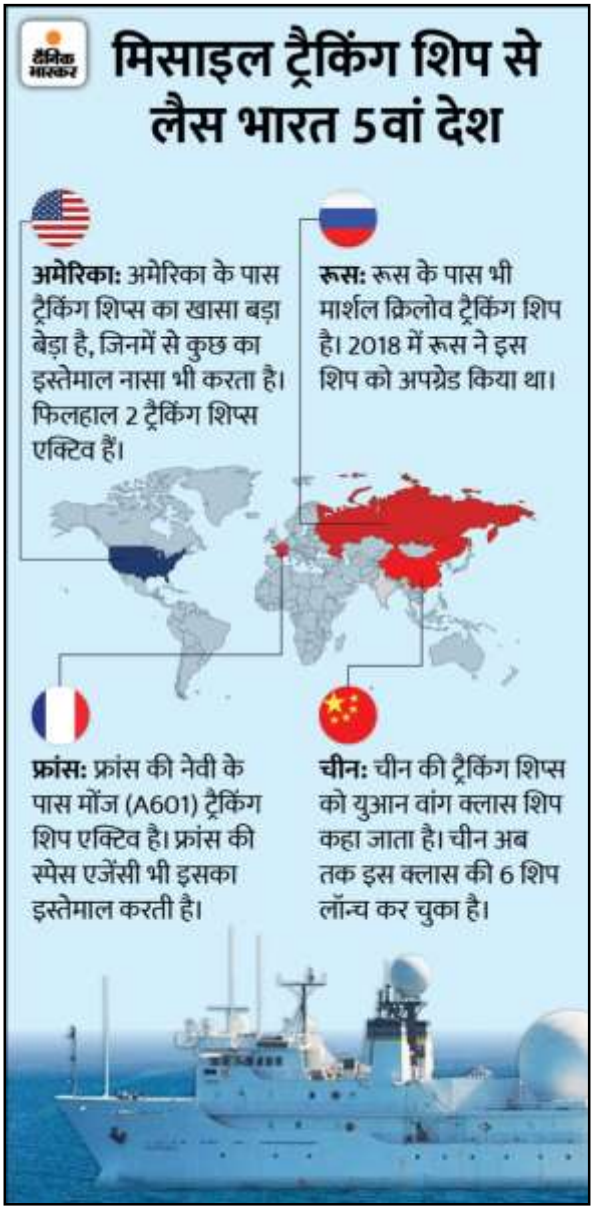
अब ध्रुव के बारे में जान लीजिए

ध्रुव को डिफेंस रिसर्च एंड डेवलपमेंट ऑर्गेनाइजेशन (DRDO), नेशनल टेक्निकल रिसर्च ऑर्गेनाइजेशन (NTRO) और भारतीय नेवी ने मिलकर बनाया है। जून 2014 से इसे बनाने का काम विशाखापट्टनम में

हिंदुस्तान शिपयार्ड लिमिटेड में चल रहा था। इसे VC-11184 के नाम से भी जाना जाता है। 2018 में शिप पूरी तरह बनकर तैयार हो गई और 2019 में सी ट्रायल्स शुरू किए गए।

ध्रुव की खासियत

- ध्रुव एक्टिव इलेक्ट्रॉनिक स्कैन्ड अरे रडार्स (AESA) से लैस है। AESA को रडार टेक्नोलॉजी की सबसे उन्नत तकनीक माना जाता है। यह रडार अलग-अलग ऑब्जेक्ट्स का पता लगाने के साथ ही दुश्मन की सैटेलाइट्स पर भी नजर रखती है। AESA तकनीक की मदद से किसी मिसाइल की क्षमता और उसकी रेंज का भी पता लगाया जा सकता है।
- ध्रुव परमाणु मिसाइल को ट्रैक करने के साथ-साथ बैलेस्टिक मिसाइल और लैंड बेस्ड सैटेलाइट्स को भी ट्रैक कर सकता है।
- ये समुद्र में 2 हजार किलोमीटर तक 360 डिग्री नजर रख सकता है। शिप में कई रडार का कॉम्बिनेशन सिस्टम लगा है जो एक साथ मल्टीपल टारगेट पर नजर रख सकता है।
- ध्रुव कमांड, कंट्रोल और कम्युनिकेशन सिस्टम (C3) और इलेक्ट्रॉनिक सपोर्ट मेजर एंटीना (ESM) तकनीक से लैस है। ये तकनीक दूसरे जहाजों से निकलने वाले इलेक्ट्रोमैग्नेटिक रेडिएशन को कैच कर उनकी लोकेशन का पता लगा सकती है।
- ध्रुव के रडार डोम में X- बैंड रडार भी लगे हुए हैं, जो सटीक स्कैनिंग का काम कर सकते हैं। साथ ही लॉन्ग रैंज के लिए S-बैंड रडार से लैस है। ये हाई रिजॉल्यूशन, जैमिंग रेसिस्टेंस और लॉन्ग रेंज स्कैनिंग के लिए सबसे आधुनिक तकनीक है।
- ध्रुव से चेतक और इसी तरह के मल्टीरोल हेलिकॉप्टर को भी ऑपरेट किया जा सकता है।
- 15 हजार टन डिस्प्लेसमेंट वाली इस शिप को मेक इन इंडिया इनीशिएटिव के तहत बनाया गया है। भारत में बनने वाली ये अब तक की सबसे बड़ी शिप में से एक है।



अभी किन देशों के पास है मिसाइल ट्रैकिंग शिप?

ध्रुव भारत के लिए बेहद खास है। नेवी में कमीशनिंग के बाद भारत उन चुनिंदा देशों के एलीट क्लब में शामिल हो जाएगा, जिनके पास मिसाइल ट्रैकिंग शिप

है। फिलहाल, चीन, फ्रांस, रूस और अमेरिका के पास ही इस तरह की शिप है। भारत इस क्षमता से लैस शिप वाला दुनिया का 5वां देश बनेगा।

भारत ने अगस्त में ही अपने पहले स्वदेशी एयरक्राफ्ट कैरियर 'विक्रांत' का समुद्री ट्रायल शुरू किया था।

भारत का बेहद सीक्रेट प्रोजेक्ट है 'ध्रुव'

ध्रुव की अहमियत का अंदाजा इसी बात से लगाया जा सकता है कि इस पूरे प्रोजेक्ट को बेहद सीक्रेट रखा गया है। इसे पहले VC-11184 कोडनेम दिया गया था, जो इसका विशाखापट्टनम में यार्ड नंबर था। विशाखापट्टनम में जहां शिप को बनाने का काम चल रहा था वहां भी एक बंद डोकयार्ड में इसे बनाया जा रहा था ताकि किसी को खबर न लगे।

कैसे काम करती हैं मिसाइल ट्रैकिंग शिप?

दरअसल अभी किसी भी मिसाइल को तभी ट्रैक किया जा सकता है, जब वो हमारे एयर डिफेंस सिस्टम की रेंज में हो। एयर डिफेंस सिस्टम की रेंज से बाहर वाली मिसाइल जब तक ट्रैक होती है तब तक वह अपने टारगेट के पास आ जाती है और उन्हें न्यूट्रलाइज नहीं किया जा सकता।

मिसाइल ट्रैकिंग शिप में रडार और एंटीना से बना इलेक्ट्रॉनिक सिस्टम लगा होता है। ये सिस्टम अपनी रेंज में आने वाली मिसाइल को ट्रैक कर लेता है और उसकी जानकारी एयर डिफेंस सिस्टम को भेज देता है। यानी एयर डिफेंस सिस्टम की रेंज में आने से पहले ही मिसाइल की जानकारी मिल जाती है और हमले को नाकाम किया जा सकता है।

भारत के लिए कितना अहम है 'ध्रुव'?

सेंटर फॉर जॉइंट वॉरफेयर स्टडीज के सीनियर फेलो कैप्टन केके अग्निहोत्री के मुताबिक, भारत के लिए ये बड़ा कदम है। इंटर कॉन्टीनेंटल बैलेस्टिक मिसाइल को ट्रैक करने के लिए ये शिप बेहद अहम है, लेकिन भारत को इस तरह की और शिप डेवलप करना होगी। चीन के पास इस तरह की कई शिप हैं, जिन्हें वो अलग-अलग जगहों पर तैनात करता रहता है।

https://www.bhaskar.com/db-original/explainer/news/indias-dhruv-will-keep-an-eye-on-the-missiles-of-enemy-countries-from-the-sea-know-why-missile-tracking-ship-is-special-for-india-128895485.html

THE HINDU BusinessLine

Sat, 04 Sept 2021

T-Works, T-Hub co-host high-tech start-ups on DRDO tech development

₹10 crore grant per start-up for defence projects

Hyderabad: T-Works and T-Hub co-hosted a high-level DRDO team led by Director Nidhi Bansal to orient start-ups and MSMEs on DRDO's Technology Development Fund Scheme.

Under the scheme, start-ups can compete for grants of up to ₹10 crore each for developing high-technology solutions against specific requirements.

Jayesh Ranjan, Principal Secretary, Industries and ITE&C Dept said "The Telangana government has been proactive in facilitating unique central government schemes such as DRDO-TDF to reach our start-ups. We have T-Works, T-Hub, We-Hub, and RICH as part of our innovation ecosystem to drive start-up growth in the State and country."

T-Works, India's largest prototyping centre, will enable start-ups to develop products for DRDO through access to industry-grade equipment and in-house technical experts. "The facility will lower barriers for participating companies by providing high-end prototyping techniques at affordable prices all under one roof in our 78,000 sft centre in Hi-tec City," said Sujai Karampuri, CEO T-Works and Director Electronics, EV and ESS in the Telangana.

Nidhi Bansal, Director DRDO-TDF said, "Start-ups working with T-Works and T-Hub can make efficient use of the funds awarded by DRDO-TDF. In fact, 20 per cent of the awarded funds may be used by start-ups to utilise services of supporting incubators."

Technology Development Fund has been established to promote self-reliance in Defence Technology as a part of 'Make in India' initiative. It is a programme of the Ministry of Defence and executed by DRDO to meet the requirements of the tri-Services, defence production and DRDO. The scheme encourages participation of public/private industries, with a preference for start-ups and MSMEs, so as to create an ecosystem for enhancing cutting edge technology capability in the defence sector.

The event was attended by Director Aerospace and Defence, Addl Director DRDO-TDF and 50 start-ups and MSMEs.

https://www.thehindubusinessline.com/info-tech/t-works-t-hub-co-host-high-tech-start-ups-on-drdo-tech-development/article36275772.ece

THE NEW INDIAN EXPRESS

Sat, 04 Sept 2021

Rs 10 crore fund for startups, MSMEs under DRDO scheme

Bansal said that startups working with T-Hub and T-Works could make efficient use of funds

Hyderabad: Startups and MSMEs can now avail Rs 10 crore as Technology Development Fund (TDF) to develop cutting-edge solutions for DRDO's defence technology. T-Works and T-Hub co-hosted a high-level DRDO team led by Nidhi Bansal, Director, DRDO-TDF, to orient startups and MSMEs on the Ministry of Defence's scheme on Friday.

For representational purpose.

Bansal said that startups working with T-Hub and T-Works could make efficient use of funds. He said that 20 per cent of the fund could be used by startups to utilise services of incubators supporting them. Jayesh Ranjan, Principal Secretary, ITE&C, has said that T-Works, India's largest prototyping centre, would enable startups to develop products which meet stringent quality standards of DRDO, through access to industry-grade equipment and in-house technical experts.

"The facility will lower the barriers for participating companies, by providing high-end prototyping techniques at affordable prices- all under one roof in our 78,000 square-foot centre," said Sujai Karampuri, CEO, T-Works and Director of Electronics, EV and ESS. TDF has been established to promote self-reliance in defence technology as part of 'Make in India' initiative.

https://www.newindianexpress.com/cities/hyderabad/2021/sep/04/rs-10-crore-fund-for-startups-msmes-under-drdo-scheme-2354166.html

mint

Sat, 04 Sept 2021

DRDO, Amity University jointly roll out defence technology course

- ***India is striving to augment self-reliance in defence technology including missiles, fighter aircraft, drones, naval systems, combat vehicles, radars, sonars, higher energy materials and directed energy systems***

New Delhi: Defence Research and Development Organisation (DRDO) has joined hands with Amity University to roll out a niche defence technology course to augment human resource pool in the sector and create talent to build startups.

The government's call for self-reliance in defence sector will require a large number of highly skilled engineers and technologists. (Photo source: Twitter)

"India needs to develop its ecosystem for defense research and have launched several schemes to fund start-ups. Students after completion of this program can make their own R&D startup (As well). The aim is to fight the next war with our weapons," said H.B Srivastava, director general-technology management, DRDO, which is the premier R&D wing of the defence ministry.

Both the organisations said the program is being jointly launched for "generating the talent pool… required in defence sector".

India is striving to augment self-reliance in defence technology including missiles, fighter aircraft, drones, naval systems, combat vehicles, radars, sonars, higher energy materials and directed energy systems etc.

Besides the R&D endeavors, manufacturing in defence sector is getting a boost with the announcement of two different corridors in Uttar Pradesh and Tamil Nadu. The government's call for self-reliance in defence sector will require a large number of highly skilled engineers and technologists, the organisations claimed.

The programme will focus on six subjects of specializations -- Combat Vehicle Engineering, Aerospace Technology, Communication Systems and Sensors, High Energy Materials Technology, Naval Technology and Directed Energy Technology.

The course shall offer an opportunity to students to conduct projects at DRDO laboratories, defence PSUs and private industries for creating job-ready defence technology professionals.

Ashok K Chauhan, founder president of Amity Education Group, announced "50% scholarship for all students" of the M.Tech Defense Technology program at all Amity campuses.

https://www.livemint.com/education/news/drdo-amity-university-jointly-roll-out-defence-technology-course-11630738684826.html

THE NEW INDIAN EXPRESS

Sat, 04 Sept 2021

India wants to create USD 5 billion worth of defence equipment by 2025: DRDO official

He made the remarks at the launch of Amity University's M Tech in Defence Technology course, its joint programme with the DRDO and the All India Council for Technical Education

Noida: The Union government has an ambition to create a USD 5 billion worth of defence equipment by 2025, a senior DRDO official said here on Friday, emphasising on the need for developing an ecosystem for defence research in the country.

To realise this ambition, the government has also launched several schemes to fund startups, Defence Research and Development Organisation (DRDO) Director General (Technology Management) Hari Babu Srivastava said.

Akash NG missile being test fired from the Integrated Test Range off Odisha coast on Friday. (Photo | EPS)

He made the remarks at the launch of Amity University's M Tech in Defence Technology course, its joint programme with the DRDO and the All India Council for Technical Education (AICTE).

"The genesis of this programme is to generate wealth for the country. All wealthy countries have rich defence ecosystems and the Indian government has the ambition to create USD 5 billion of defence equipment by 2025," Srivastava said, according to a statement.

"To achieve this, we need to increase efficiency and the number of productive people from day one, and thus, the incubation period will reduce. India needs to develop its ecosystem for defence research and have launched several schemes to fund startups," he said while addressing the students of the university.

He said students, after completion of this programme, can make their own research and development (R&D) startup, adding that the "aim is to fight the next war with our weapons".

Amity Group's founder Chairman Ashok K Chauhan thanked the government agencies for partnering with the private university for the programme.

https://www.newindianexpress.com/nation/2021/sep/03/india-wants-to-create-usd-5-billion-worth-of-defence-equipment-by-2025-drdo-official-2353966.html

The Indian EXPRESS

Mon, 06 Sept 2021

LCA programme created an aeronautical ecosystem in India, we flew a record 5,000 sorties without accident: IAF veteran

Air Marshal (Retd) Philip Rajkumar says without the strong foundation laid by the Tejas programme it wouldn't have been possible to develop the LCA MK II and later the advanced medium combat aircraft

By Aksheev Thakur

Bengaluru: In February 2020, 78-year-old Air Marshal (Retd) Philip Rajkumar became the oldest officer to fly the indigenously built Light Combat Aircraft (LCA). Over the years, the 1965 war veteran, who resides in Bengaluru has been closely associated with the development of the indigenous fourth generation fighter aircraft which is now being procured by the Indian Air Force to create LCA squadrons.

Air Marshal (Retd) Philip Rajkumar | Express photo

In 1994, he was the Additional Assistant Chief of Air Staff or ACAS (Ops) at Air HQ when former president Dr APJ Abdul Kalam sent him to the Aeronautical Development Agency (ADA) to oversee flight testing of the LCA. He served at the ADA from 1994-2003 during which he set up the National Flight Test Centre. Recently, he authored 'Radiance in Indian Skies – The Tejas Saga' with journalist BR Srikanth. Air Marshal (Retd) Rajkumar speaks to The Indian Express on the LCA fighter programme and his book:

How did the idea of writing the book 'Radiance in Indian Skies – The Tejas Saga' come about?

Dr G Satish Reddy, Chairman of the Defence Research and Development Organisation (DRDO), wanted us to write 'feel good' stories listing its achievements. I was the Additional Assistant Chief of Air Staff or ACAS (Ops) at Air HQ when I was sent to the Aeronautical Development Agency (ADA), an autonomous agency under DRDO which was created in 1984.

So I mentioned the Light Combat Aircraft (LCA) Tejas project to Reddy. The book was authorised by the DRDO in March 2018. We spent three years writing it. Quite a lot of time was lost due to the pandemic. Along with co-author and journalist BR Srikanth, I interviewed a good number of people. The main problem we faced was that the book should have a coherent chronological narrative. The ADA gave us administrative support. I had to make sure that the technical details were appropriate. The whole idea was to release the book at Aero India 2021.

At the age of 78 you were the oldest IAF officer to have flown the LCA Tejas. How was the experience?

I flew the Tejas on February 28, 2020. It was always there in my mind that before I wrote the book, I must at least have one sortie and see how flight control systems are behaving. I had worked on the initial development of flight controls from 1994-1996, but I had never flown it. When the two-seater version of the Tejas was ready, a lot of people were having joyrides, including PV Sindhu and Ratan Tata. I requested Satish Reddy that I be permitted to fly even though I was 78 years old. So he agreed.

It was a great delight. The flight controls were working perfectly. When I left in 2003 the aircraft was in its early stages of development. Initially we had problems with brakes. Everything has been sorted out. During the sortie we had a look at the radar which was very impressive. We

tried out some of the attack modes. The engine response was very good. We also checked out the autopilot. I am sure operationally it will improve itself in the coming years.

There is criticism that the LCA project took so many years.

The main reason why it took so much time was the way we conceived the project. In western countries, they first develop the technologies and only when the technologies and industrial infrastructure are in place, will they launch the project. The Eurofighter, developed by a consortium of British, Spanish, Italian and German companies, was created this way. In the mid-1970s, British Aerospace converted a Jaguar aircraft into a fly-by-wire (electrically signalled control system) aircraft. Then in between 1984-1988 they built an aircraft very similar to the Eurofighter called the experimental aircraft programme and then flew it. In 1990, they finally launched the Eurofighter project. By 2005 the fighter went into service.

Now, in India we had absolutely no idea on how to develop fly-by-wire. We had never done it before. Our industrial infrastructure was weak. We were attempting to put new technologies together into the air frame – fly-by-wire, glass cockpit, composite materials in the air frame. The switch was pressed on the day ADA was formed in 1984. We finished the technology demonstration in 2004. We gave final operational clearance in 2019 which was 15 years later, same as the Eurofighter. It appears like we took a long time because we started the clock at the beginning of the formation of ADA and not at a time when the technologies were available. But we have taken as much time as anybody else.

Critics also point out the allotment of thousands of crores for the project.

From the very first allotment of Rs 560 crore in 1986 to the time when the first carrier landing took place in January 2020, the total amount spent on the project was Rs 14,293 crore. If that is divided by 34 years you get a figure of Rs 420 crore. By investing Rs 420 crore a year, this country has built 17 prototypes including two naval prototypes. We flew 5,000 development sorties without a single accident which is a record. Half that money was invested in India itself in building infrastructure at HAL, private industries and DRDO laboratories. We set up an aeronautical industrial ecosystem in the country for future projects. LCA MK II, the twin engine deck-based fighter, and 10 years later the advanced medium combat aircraft would not have been possible without the foundation laid by the Tejas programme. So the criticism is unfounded.

You have witnessed the LCA programme since its inception. Was there any attempt by the political class during all these years to derail the project?

Aerospace scientist Professor Roddam Narasimha met Mrs Gandhi (former Prime Minister Indira Gandhi) and told her that she has supported the space programme, atomic energy programme but not aeronautics. She said, “You all do not speak with one voice. You say something, IAF and HAL say something. The day you will speak in one voice, the next day I will authorise the programme.”

So ADA was formed. I would categorically say that financial and political support irrespective of political view was always there from the Union government. In the early 1990s, when Sharad Pawar was the defence minister he formed a committee which had industrialists like Ratan Tata and a few MPs to see if we can go ahead with the project. This was after the project definition phase between 1987 and 1988. Dassault France came down to India and stayed for one year. Their engineers developed a project definition report. The report was read out at the Air HQ and it was said that at the time frame being indicated and the cost being indicated they didn’t think it could be done. It will take more time and more money. Some MPs had expressed doubts but the Union government always backed us which is why we kept sailing.

https://indianexpress.com/article/cities/bangalore/air-marshal-philip-rajkumar-lca-programme-aeronautical-ecosystem-india-7490423/

THE TIMES OF INDIA

Sun, 05 Sept 2021

Innovate to meet challenges in space tech: DRDO Chief

Thiruvananthapuram: G Satheesh Reddy, DRDO Chairman and secretary of the department of defence R&D, on Saturday called for the contribution of young minds in science and space technology. The major challenges the space programmes face at present are in the areas of payload and debris management, he said.

Reddy was delivering the ninth convocation address of Indian Institute of Space Science and Technology (IIST) here. “Artificial intelligence-based satellites, space-based communication systems for defence in space, ground and under water, cyber security need for mini and micro payloads, etc, are the areas in which the young minds of the nation have to come up with innovative ideas,” he said.

Speaking on the occasion, K Sivan, president, governing body of IIST/secretary of department of space & Isro chairman, pointed out that space technology is a critical tool which is applicable in all areas of development.

Welcoming the gathering, S Somanath, director of IIST, said the institute has put in every effort and engaged all its resources to ensure that the process of teaching-learning continues unabated and uncompromised.

The status of forthcoming projects such as INSPIRESAT-1, ARIS-2 payload, and RPA-V payload for Venus mission, system for future advanced spacecraft, etc, were presented by IIST chancellor Dr BN Suresh at the convocation ceremony.

A total of 223 degrees were awarded in virtual mode during the occasion. UG topper Shashank Tomar and PG topper Sandeep CR were awarded with gold medals. Parthsarathi Samantha and Raghav Hariharan were awarded the excellence certificates for the best all-round performance in academic, co-curricular and extra curricular activities.

https://timesofindia.indiatimes.com/city/thiruvananthapuram/innovate-to-meet-challenges-in-space-tech-drdo-chief/articleshow/85935175.cms

THE HINDU

Sun, 05 Sept 2021

Leverage opportunities in private industry for future space missions, says ISRO Chairman K. Sivan

Dr. Sivan addresses the ninth convocation of the Indian Institute of Space Science and Technology (IIST) in virtual mode

Thiruvananthapuram: the Indian Space Research Organisation (ISRO) is fully committed to enabling private industry and the academia to effectively participate in the country's space programme, ISRO Chairman K. Sivan said on Saturday.

Dr. Sivan was addressing the ninth convocation of the Indian Institute of Space Science and Technology (IIST) in virtual mode.

Dwelling on the space sector reforms kicked off by the Central government, he said India had succeeded in laying a strong foundation for the space programme, but cannot go on protecting the old system in the new environment. "That phase is over. We need to move on. For this, we have to leverage the opportunities in the private industry to generate more cash flow and investment," he said, adding that in the changed scenario, the next few years will prove crucial.

From an essentially government-funded, government-conducted activity, the space programme is transforming into a private-funded and private-conducted one. All entities under the Department of Space have revised their roles and mandates, he said.

Space debris

Delivering the convocation address, G. Satheesh Reddy, Chairman, Defence Research and Development Organisation (DRDO), underscored the need to develop technologies for addressing the problem of space debris.

Space debris, and potential collisions with satellites, have emerged as a major concern, with the increase in space-related activities globally.

Dr. Reddy stressed the importance of developing advanced technologies that enable effective space-based surveillance and defence systems and secure communication.

A total of 223 degrees were awarded on Saturday. UG topper Shashank Tomar and PG topper Sandeep C. R. were presented gold medals. Parthsarathi Samantha and Raghav Hariharan were awarded the Excellence Certificates for the best all-round performance in academic, co-curricular and extracurricular activities.

IIST Chancellor B. N. Suresh; S. Somanath, director, IIST and the Vikram Sarabhai Space Centre (VSSC), also spoke.

https://www.thehindu.com/news/national/kerala/leverage-opportunities-in-private-industry-for-future-space-missions-says-isro-chairman-k-sivan/article36290502.ece

BusinessToday.In

Sat, 04 Sept 2021

India, US sign agreement to develop Air-Launched Unmanned Aerial Vehicle

In an official statement, the Defence Ministry said the Project Agreement (PA) for ALUAV under the Joint Working Group Air Systems in the Defence Technology and Trade Initiative (DTTI) was signed on July 30

The government announced on Friday that India and the United States have signed an agreement for cooperation in the development of Air-Launched Unmanned Aerial Vehicle (ALUAV).

In an official statement, the Defence Ministry said the Project Agreement (PA) for ALUAV under the Joint Working Group Air Systems in the Defence Technology and Trade Initiative (DTTI) was signed on July 30.

This project agreement for the ALUAV falls under the research, development, testing and evaluation (RDT&E) Memorandum of Agreement

"The agreement is a significant step towards deepening defence technology collaboration between the two nations through co-development of defence equipment," noted the Defence Ministry.

This project agreement for the ALUAV falls under the research, development, testing and evaluation (RDT&E) Memorandum of Agreement, which was signed between the Ministry of Defence and US Department of Defence in January 2006 and renewed in January 2015.

"The PA outlines the collaboration between Air Force Research Laboratory, Indian Air Force, and Defence Research and Development Organisation towards design, development, demonstration, testing and evaluation of systems to co-develop an ALUAV Prototype," the Defence Ministry said.

The Aeronautical Development Establishment (ADE) at DRDO and the Aerospace Systems Directorate at the Air Force Research Laboratory (AFRL), along with the Indian and US Air Forces, are the principal organisations responsible for the execution of this agreement.

The Defence Ministry added the main aim of the Defence Technology and Trade Initiative (DTTI) is to bring sustained leadership focus to promote collaborative technology exchange and create opportunities for co-production and co-development of future technologies for the Indian and US military forces.

Under the initiative, Joint Working Groups on land, naval, air, and aircraft carrier technologies have been established to focus on mutually agreed projects in respective domains.

The ministry said the PA for the co-development of ALUAV has been overseen by the Joint Working Group on Air Systems. The Defence Ministry termed it as a "major accomplishment for DTTI".

https://www.businesstoday.in/latest/economy/story/india-us-sign-agreement-to-develop-air-launched-unmanned-aerial-vehicle-305878-2021-09-03

DAILYEXCELSIOR.COM

Sat, 04 Sept 2021

Parl Panel seeks details from BRO, ITBP, DRDO on representation to SC/STs

Jammu: A high-level Parliamentary Committee on Welfare of Scheduled Castes and Scheduled Tribes, which is on a week-long tour of the Union Territories of Ladakh and Jammu and Kashmir, has sought details of representation of SCs/STs in the Indo-Tibetan Border Police (ITBP), Defence Research and Development Organization (DRDO) and Border Roads Organization (BRO) during their meetings with representatives of the three bodies in Leh besides strengthening of Reservation Policy in the Central Institute of Buddhist Studies (CIBS).

The Committee headed by Dr (Prof) Kirit Premjibhai Solanki and comprising around 30 Members of Parliament today formally began its two days visit to Leh though the members had started gathering in the cold desert region on September 1 and 2.

Solanki also met Lieutenant Governor of Ladakh Radha Krishna Mathur in the evening and discussed with him the Reservation Policy in the Union Territory of Ladakh and other welfare measures for Scheduled Castes and Scheduled Tribes. The meeting lasted about half an hour, official sources told the Excelsior.

While Solanki alone met the Lieutenant Governor of Ladakh, the Parliamentary Panel held discussions with LG's Advisor Umang Narula and other senior officers of the Union Territory administration regarding socio-economic and educational conditions of SCs/STs in the UT and other welfare measures taken by Social Welfare/Tribal Departments for the two communities. "The administration is reported to have given detailed account of the welfare measures and Reservation Policy for SC/STs in the Union Territory of Ladakh," sources said.

The Parliamentary Panel held separate discussions with the management of ITBP, DRDO and BRO regarding representation of SC/STs in services and other welfare measures taken for them. While there was no official word on the meetings the Parliamentary Committee on Welfare of SC/STs had with ITBP, DRDO and BRO, sources pointed out that top officials of the three Organizations were reported to have given the requisite details sought by the Panel.

Separately, the Parliamentarians also held discussions with SC/ST Employees Welfare Association, if any, or staff members of the two communities of the three bodies including ITBP, DRDO and BRO to ascertain their working conditions, facilities etc and steps required for their welfare.

The MPs also discussed strengthening of Reservation Policy and related matters with the management of the Central Institute of Buddhist Studies and invited their suggestions in this regard during the half an hour long meeting.

Tomorrow, the Parliamentary Committee will visit SC/ST/Tribal villages in Leh to see their social, economic and educational conditions and other welfare schemes.

They will also have meeting with local administration/Social Welfare/ Tribal Departments tomorrow.

The Panel will leave for Srinagar on September 6 and will have hectic schedule of meetings with administration, different Employees Welfare Associations of SCs/STs etc, They are scheduled to return to New Delhi on September 8.

The Panel members comprised Girish Chandra, Santokh Singh Chaudhary, Anil Firojiya, Tapir Gao, Goddeti Madhavi, Pratima Mondal, Ashok Mahadeorao Nete, Vincent H Pala, Chhedi

Paswan, Prince Raj, Andimuthu Raja, Upendra Singh Rawat, Sandhya Ray, Ajay Tamta, Rebati Tripura, Kripal Balaji Tumane, Rattan Lal Kataria, Guman Singh Damor, Jagannath Sarkar, all from Lok Sabha, Abir Ranjan Biswas, Shamsher Singh Dullo, Kanta Kardam, Naranbhai J Rathwa, Ram Shakal, Dr Sumer Singh Solanki, K Somaprasad, Pradeep Tamta, Kamakhya Prasad Tasa and Ramkumar Verma, all from Rajya Sabha.

Another Parliamentary Committee on Subordination Legislation headed by Balashowry Vallabhanemi will also be on a four-day visit of the Union Territories of Jammu and Kashmir and Ladakh from September 4.

The Panel will be in Leh from September 4-5 and reach Jammu on September 6. It will be meeting officials of the Border Roads Organization (BRO) and Indo-Tibetan Border Police (ITBP) among others in Leh besides representatives of several companies like LIC and GIC in Jammu. "Schedule of some other Parliamentary Panels for visits to the Union Territories of Jammu and Kashmir and Ladakh is being finalized and they will set out on the tour of two UTs once their tour schedule is released," sources said.

Meanwhile, Sikkim Governor Ganga Prasad reached Leh today on a five-day visit of Ladakh. Tomorrow, Prasad will inaugurate session of Organic Farming Facilitation Centre in Leh in the presence of Lieutenant Governor of Ladakh Radha Krishna Mathur.

During past few days, 13 Parliamentary Standing Committees and 300 MPs have visited the Union Territories of Jammu and Kashmir and Ladakh including PSC on Home Affairs, Public Accounts Committee (PAC), Committees on Urban Development Department, Commerce etc.

https://www.dailyexcelsior.com/parl-panel-seeks-details-from-bro-itbp-drdo-on-representation-to-sc-sts/

COVID 19: DRDO's Contribution

EQUITY BULLS

Sun, 05 Sept 2021

BHL launched 2-Deoxy-D-Glucose formulation under the brand name 'DGJAJ'

Bajaj Healthcare Limited (BHL) a leading manufacturer of APIs, Intermediates and Formulations has announced the launch of API and Formulation of "DGJAJ" (2-Deoxy-D-Glucose), an antiviral drug used for treating COVID patients, in collaboration with Defence Research and Development Organisation (DRDO). BHL had received a license agreement from DRDO on 7th July, 2021, to manufacture and market 2-Deoxy-D-Glucose (2-DG). The production of "DGJAJ" commenced from today onwards.

2-Deoxy-D-glucose (2-DG) is a glucose analogue, which has the 2-hydroxyl group replaced by hydrogen. 2-DG is transported in cells by the glucose transporters on the cell membrane but it cannot undergo further glycolysis and act as inhibitor of glycolysis. Therefore, cells with higher glucose uptake, for example tumour cells, virally infected cells, inflammatory cells have also a higher uptake of 2-DG. Since, it accumulates selectively more in such cells with high glucose demand; it offers an attractive approach of inhibiting tumour cell growth, viral infection and inflammation.

2-Deoxy-D-Glucose (2-DG) helps in the faster recovery of hospitalised patients and reduces supplemental oxygen dependence. The drug works by selectively accumulating in the virusinfected cells and prevents virus growth by stopping viral synthesis and energy production. It can be administered only upon prescription and under the supervision of a qualified physician to hospitalised moderate to severe COVID-19 patients as an adjunct therapy to the existing standard of care.

The drug comes in powder form in a sachet, which is taken orally by dissolving it in water. Its selective accumulation in virally infected cells makes this drug unique.

Commenting on the announcement, Mr. Anil Jain, Joint Managing Director, Bajaj Healthcare said "We are pleased to commence the production of 2-Deoxy-D-Glucose under our brand name "DGJAJ", after receiving license from DRDO. We are quite delighted to add yet another product in our product portfolio. This product will further help us in growing our formulation business.

Health experts are anticipating a 3rd wave of COVID-19, which may be even more severe as the virus has undergone several mutations over the time. We hope the availability of an effective treatment such as 2-Deoxy-D-Glucose (2-DG) will offer patients with much needed and timely therapy option. Most patients ailing from moderate to severe symptoms can benefit from the use of 2-Deoxy-D-Glucose."

Shares of Bajaj Healthcare Limited was last trading in BSE at Rs. 890 as compared to the previous close of Rs. 898.4. The total number of shares traded during the day was 24484 in over 1209 trades.

The stock hit an intraday high of Rs. 910 and intraday low of 882.1. The net turnover during the day was Rs. 22005340.

https://equitybulls.com/admin/news2006/news_det.asp?id=298064

नईदुनिया

Fri, 03 Sept 2021

Bilaspur News: मातृ-शिशु अस्पताल में आक्सीजन प्लांट बनकर तैयार, ट्रायल हुआ पूरा

अब मरीजों के हर बेड में आक्सीजन सप्लाई की सुविधा

बिलासपुर: कोरोना की संभावित तीसरी लहर से पहले ही जिला अस्पताल और मातृ-शिशु अस्पताल में दूसरे मेडिकेटेड मिनी आक्सीजन प्लांट बन कर तैयार हो गया है। जिसका ट्रायल भी पूरी तरह सफल रहा है। अब मरीजों के हर बेड में आक्सीजन सप्लाई की सुविधा रहेगी। इसके शुरू होने बाद जिला अस्पताल को बाहर से आक्सीजन सिलिंडर मांगने की जरूरत नहीं पड़ेगी।

अस्पताल प्रबंधन का कहना है कि कोविड के दूसरे संक्रमणकाल में जिस तरह से आक्सीजन की समस्या हुई थी, अब ऐसी समस्या का सामना नहीं करना पड़ेगा। जिला अस्पताल के आरएमओ डाक्टर सीबी मिश्रा ने बताया कि प्लांट लगने से जिला अस्पताल परिसर स्थित मातृ-शिशु अस्पताल और जिला अस्पताल में प्रति मिनट 500 लीटर आक्सीजन की आपूर्ति शुरू हो गई है।

प्लांट का निर्माण रक्षा अनुसंधान एवं विकास संगठन (डीआरडीओ) द्वारा काराया गया है। प्लांट अब पूरी तरह बनकर तैयार हो चुका है। इसका ट्रायल भी पूरी तरह सफल रहा है। जरूरत पड़ने पर इस नए प्लान्ट से आक्सीजन सप्लाई शुरू कर दी जाएगी।

कर्मचारियों का ट्रेनिग शुरू

आक्सीजन प्लांट को संचालित करने के लिए अस्पताल के कर्मचारियों को भी विशेष ट्रेनिंग दी जा रही है। प्लांट से मातृ-शिशु अस्पताल में बनाए गए चिल्ड्रेन वार्ड सहित अन्य वार्डों में ऑक्सीजन सप्लाई के लिए पाइप लाइन भी बिछाई जा चुकी है। सीएमएचओ डॉ. प्रमोद महाजन ने बताया कोरोना की संभावित तीसरी लहर से निपटने के लिए स्वास्थ्य विभाग व जिला प्रशासन के सहयोग से इस कार की को तैयार किया गया है।

https://www.naidunia.com/chhattisgarh/bilaspur-oxygen-plant-ready-in-mother-child-hospital-trial-completed-7019906

KASHMIR
READER

Sun, 05 Sept 2021

12 Oxygen Generation Plants under PMCF functional in Kashmir

Important milestone achieved in the preparation of 3rd wave of Covid-19: Div Com Kmr

Srinagar: The Divisional Commissioner (Div Com) Kashmir, Pandurang K. Pole today convened a meeting here to review the Oxygen capacity of hospitals in Kashmir.

During the meeting, the Div Com reviewed the progress achieved in capacity building of Oxygen plants across Kashmir. The meeting was apprised about the functioning of all the 12 Oxygen generation plants across Kashmir which were received by the divisional administration under P.M Cares Fund (PMCF), (Prime Minister's Citizen Assistance and Relief in Emergency Situation fund).

The Div Com expressed his pleasure over this achievement and described it as an important milestone in the preparation of the 3rd wave in Kashmir.

These plants were installed at JLNM Hospital Srinagar, DH Ganderbal, DH Pulwama, DH Shopian, DH Kulgam, DH Kupwara, DH Bandipora, GMC Anantnag, GMC Baramulla, SDH Magam, CD Hospital and DRDO Khanmoh. With the installation of these 12 oxygen generation plants there has been an increase of 11250 LPM in the Kashmir division.

Before the onset of the Ist wave, the Oxygen capacity of the Kashmir division was just 12466 LPM and it has now reached 60391 LPM. This additional capacity of Oxygen generation plants is an important step in the upliftment of vital capacity in the form of Oxygen which is the most important remedy in treating moderate and severe cases of Covid-19 infection.

The Div Com directed all the district administrators to form CAB monitoring teams in their respective districts so that a strong surveillance mechanism is put in place as the general public is showing complacency vis-à-vis adopting CAB; which can prove disastrous for the division in view of 3rd wave threat.

The Div Com directed the concerned to pace up the vaccination coverage in all districts of Kashmir division at war footing basis.

The meeting was attended by Incharge Divisional Covid-19 Control Room Kashmir (DCCRK), Tahir Ahmad Magray and various senior level Public Health Specialists of DCCRK.

https://kashmirreader.com/2021/09/05/12-oxygen-generation-plants-under-pmcf-functional-in-kashmir/

DRDO on Twitter

A. Bharat Bhushan Babu @SpokespersonMoD · Sep 4

Raksha Rajya Mantri Shri @AjaybhattBJP4UK visited Instruments Research & Development Establishment of @DRDO_India, Dehradun, where he interacted w/ officials & planted a sapling. #IRDE does research, develop technology in optical, electro-optical instrumentation for #ArmedForces

Dr. Kirit Solanki MP @drkiritpsolanki · Sep 4

आज #DRDO संचालित #डिफ़ेन्स_इन्स्टिट्यूट_ओफ़_हाईऐल्टिट्यूड_रीसर्च का एससी/एसटी कमिटी का दौरा किया। ऊँचाई पर सब्ज़ी, फ्रूट्स, एनिमलस वि में वैज्ञानिक शोध और ऑर्गैनिक पद्धति से बढ़िया बना कर हमारे जवान और स्थानिक लोगों को मदद की जाति है।

Kanta Kardam @kanta_kardam · Sep 4

आज लेह में DRDO संचालित डिफेंस इंस्टीट्यूट ऑफ हाई एल्टीट्यूड रिसर्च का दौरा किया, DRDO निष्क्रिय ग्रीनहाउस प्रौद्योगिकी, शून्य ऊर्जा आधारित तकनीक भंडारण, आदि का उपयोग कर रहा है

भारतीय सेना एवं स्थानीय लोगों के लिए सब्जियां, फल और औषधीय जड़ी-बूटियों की खेती कर मदद की जा रही है

PIB in KERALA @PIBTvpm · Sep 4

Innovative ideas should come up for meeting new challenges of space technology: DRDO Chairman Satheesh Reddy

He was delivering the ninth Convocation address of Indian Institute of Space Science and Technology (IIST) Thiruvananthapuram.

PIB in KERALA @PIBTvpm · Sep 4

DRDO Chairman & Secretary DDR&D Dr. G Satheesh Reddy has called for contribution of the young generation in the all avenues in science and technology especially in the area of space wherein management of the increase in density of payloads and space debris is a new challenge.

DRDO @DRDO_India · Sep 3

#AzadiKaAmritMahotsav DRDO Lecture Series on Advanced Defence Systems & Technologies commenced today with a lecture by Shri PK Thakur, CFEES DRDO. Dr G Satheesh Reddy, Chairman DRDO gave opening remarks. Faculty members, students & scientist across India attended the lecture.

BECIL @BECIL_India · Sep 3

BECIL Chief Strategic Officer -Dr. Nishakant Ojha visited BrahMos Aerospace of Defense Research & Development Organization (DRDO) and met its CEO & MD -Dr. Sudhir K Mishra in connection to the strategic projects.

#BECIL #DRDO #BrahMosAerospace @DRDO_India @BrahMosAerospace

Defence News

Defence Strategic: National/International

Press Information Bureau
Government of India

Ministry of Defence

Fri, 03 Sept 2021 4:08PM

Pacific Air Chiefs Symposium 2021 (PACS-21)

Air Chief Marshal RKS Bhadauria PVSM AVSM VM ADC, Chief of the Air Staff (CAS) attended the Pacific Air Chiefs Symposium 2021 (PACS-21) at Joint Base Pearl Harbor-Hickam, Hawaii from 30 Aug to 02 Sep 21. The event themed "Enduring Cooperation towards Regional Stability" was attended by Air Chiefs from countries in the Indo-Pacific region. CAS was nominated as the Dean for the Symposium.

The Symposium saw deliberations through panel discussions, table top exercises and keynote addresses on topics ranging from aspects of Regional Security and the significance of Air Domain Awareness, to cooperation amongst Air Forces for Humanitarian and Disaster Relief Operations.

In addition to participation in the symposium, CAS met General Charles Q. Brown, Jr. Chief of Staff, U.S. Air Force and General Kenneth S. Wilsbach, Commander, Pacific Air Forces. He also held bilateral and multilateral meetings on defence cooperation and security with Air Chiefs from eleven other countries.

Participation in PACS 2021 provided an opportunity for enhancing mutual understanding and deepening of relationships with like-minded nations.

https://pib.gov.in/PressReleasePage.aspx?PRID=1751715

पत्र सूचना कार्यालय
भारत सरकार

रक्षा मंत्रालय

Fri, 03 Sept 2021 4:08PM

हिंद प्रशांत क्षेत्र के वायुसेना प्रमुखों की संगोष्ठी- 2021 (पैक्स-21)

एयर चीफ मार्शल आरकेएस भदौरिया, पीवीएसएम, एवीएसएम, वीएम, एडीसी, वायुसेना प्रमुख (सीएएस) ने 30 अगस्त से 2 सितंबर 2021 तक जॉइन्ट बेस पर्ल हार्बर-हिकम, हवाई में हिंद प्रशांत क्षेत्र के देशों के वायुसेना प्रमुखों की संगोष्ठी (पीएसीएस-21) में भाग लिया। "क्षेत्रीय स्थिरता की दिशा में स्थायी सहयोग" में हिंद-प्रशांत क्षेत्र के देशों के वायु सेना प्रमुखों ने भाग लिया। वायुसेना प्रमुख को संगोष्ठी के लिए डीन के रूप में नामित किया गया था।

संगोष्ठी में पैनल चर्चा, टेबल टॉप अभ्यास और क्षेत्रीय सुरक्षा के पहलुओं और एयर डोमेन जागरूकता के महत्व से लेकर मानवीय और आपदा राहत कार्यों के लिए वायु सेना के बीच आपसी सहयोग के विषयों पर विचार-विमर्श किया गया।

संगोष्ठी में भाग लेने के अलावा वायुसेना प्रमुख ने जनरल चार्ल्स क्यू ब्राउन, जूनियर चीफ ऑफ स्टाफ, अमेरिकी वायु सेना और पैसिफिक एयर फोर्स के कमांडर, जनरल केनेथ एस विल्सबैक से मुलाकात की। उन्होंने ग्यारह अन्य देशों के वायु सेना प्रमुखों के साथ रक्षा सहयोग और सुरक्षा पर द्विपक्षीय और बहुपक्षीय बैठकें भी की।

पैक्स 2021 में भागीदारी ने आपसी समझ बढ़ाने और समान विचारधारा वाले देशों के साथ संबंधों को गहरा करने का अवसर प्रदान किया।

https://pib.gov.in/PressReleasePage.aspx?PRID=1751859

Press Information Bureau
Government of India

Ministry of Defence

Sun, 05 Sept 2021 4:00PM

INS Tabar's visit to Alexandria

As part of her ongoing overseas deployment, INS Tabar entered Alexandria harbour in Egypt on 03 Sep 21. The ship was received by officials from the Egyptian Navy and the Indian Defence Attache.

Mr. Ajit Gupte, Ambassador of India to Egypt paid a visit to the ship and was provided a walk around and briefing on activities related to the ship's deployment.

Later, in the evening, a reception was hosted onboard, for which Rear Admiral Ayman al-Daly, Commander of Alexandria Naval Base, was the Chief Guest. The event was attended by a number of senior officers from the Egyptian Navy, the Alexandria government and a large number from the Indian diaspora. In addition, Commanding Officers and officers of Hellenic Navy ships Hydra and Lesbos and Cyprus Navy ship Andreas Loannides, which are visiting Alexandria for Exercise Bright Star with Egypt, were also present for the reception.

https://pib.gov.in/PressReleasePage.aspx?PRID=1752312

पत्र सूचना कार्यालय
भारत सरकार

रक्षा मंत्रालय

Sun, 05 Sept 2021 4:00PM

आईएनएस तबर की अलेक्जेंड्रिया यात्रा

अपनी निरंतर जारी विदेशी तैनाती के अंतर्गत आईएनएस तबर ने 03 सितंबर 2021 को मिस्र में अलेक्जेंड्रिया बंदरगाह में प्रवेश किया। इस जहाज का मिस्र की नौसेना और भारतीय रक्षा अटैश के अधिकारियों ने स्वागत किया।

मिस्र में भारत के राजदूत श्री अजीत गुप्ते ने जहाज का दौरा किया, उन्हें जहाज पर घुमाया गया एवं उसकी तैनाती से संबंधित गतिविधियों की ब्रीफिंग प्रदान की गई।

बाद में शाम को जहाज पर एक स्वागत समारोह का आयोजन किया गया, जिसमें अलेक्जेंड्रिया नेवल बेस के कमांडर रियर एडमिरल अयमान अल-डेली मुख्य अतिथि थे। इस कार्यक्रम में मिस्र की नौसेना के कई वरिष्ठ अधिकारी, अलेक्जेंड्रिया सरकार एवं बड़ी संख्या में भारतीय प्रवासी शामिल थे। इसके अलावा हेलेनिक नेवी जहाजों हाइड्रा और लेस्बोस और साइप्रस नेवी के जहाज एंड्रियास लोनाइड्स, जो मिस्र के साथ एक्सरसाइज ब्राइट स्टार के लिए अलेक्जेंड्रिया का दौरा कर रहे हैं, के कमांडिंग ऑफिसर और अधिकारी रिसेप्शन के लिए भी मौजूद थे।

https://pib.gov.in/PressReleasePage.aspx?PRID=1752381

Press Information Bureau
Government of India

Ministry of Defence

Sat, 04 Sept 2021 2:41PM

28th Edition of Singapore-India Maritime Bilateral Exercise 'SIMBEX'

The 28th edition of Singapore-India Maritime Bilateral Exercise (SIMBEX) was conducted from 02 to 04 Sep 21.

The Indian Navy was represented by Guided Missile Destroyer INS Ranvijay with a ship borne helicopter, ASW Corvette INS Kiltan and Guided Missile Corvette INS Kora and one P8I Long Range Maritime Patrol Aircraft. Participants from the RSN included one Formidable Class Frigate, RSS Steadfast, embarked with an S-70B naval helicopter, one Victory Class Missile Corvette, RSS Vigour, one Archer Class Submarine and one Fokker-50 Maritime Patrol Aircraft. Four F-16 fighter aircraft of the Republic of Singapore Air Force (RSAF) also participated in the exercise during the Air Defence Drills.

Initiated in 1994, SIMBEX is the Indian Navy's longest uninterrupted bilateral maritime exercise with any foreign navy. Sustaining the continuity of this significant engagement despite the challenges of the ongoing pandemic further underscores the strength of bilateral defence ties between both countries. Despite these constraints during the planning stages, both navies could achieve seamless and safe execution of several challenging evolutions including live weapon firing and advanced naval warfare serials, including anti-submarine, anti-air and anti-surface warfare drills. The scale and complexity of the drills is ample testimony to the interoperability achieved between both Navies.

This year's edition of SIMBEX is also a special occasion as it takes place during the ongoing celebrations of the 75th year of India's independence. The success of SIMBEX-2021 is yet another demonstration of the mutual resolve on both sides to strengthen the bilateral partnership further in the years ahead.

Owing to the ongoing pandemic-related constraints, this year's SIMBEX was planned without any physical interactions as an 'at-sea only' exercise hosted by the RSN in the southern fringes of the South China Sea.

India-Singapore Defence relations remain a very significant aspect of the overall bilateral relationship and cover a very wide spectrum of collaboration from conventional military-to-military exchanges to HADR and cyber security. Both navies have a representation in each other's Maritime Information Fusion Centres and have also recently signed an agreement on mutual submarine rescue support and coordination.

https://pib.gov.in/PressReleasePage.aspx?PRID=1751973

पत्र सूचना कार्यालय
भारत सरकार

रक्षा मंत्रालय

Sat, 04 Sept 2021 2:41PM

सिंगापुर-भारत द्विपक्षीय नौसैन्य अभ्यास 'सिम्बेक्स' का 28वां संस्करण संपन्न

सिंगापुर और भारत की नौसेनाओं के बीच द्विपक्षीय नौसैन्य अभ्यास (सिम्बेक्स) का 28वां संस्करण 02 से 04 सितंबर 2021 तक आयोजित किया गया था।

भारतीय नौसेना का प्रतिनिधित्व गाइडेड मिसाइल विध्वंसक आईएनएस रणविजय ने जहाज से उड़ने वाले एक हेलीकॉप्टर, पनडुब्बी रोधी युद्धपोत आईएनएस किल्टन और गाइडेड मिसाइल युद्धपोत आईएनएस कोरा तथा एक पी8आई लंबी दूरी के समुद्री निगरानी विमान के साथ किया था। वहीं, रिपब्लिक ऑफ सिंगापुर नेवी- आरएसएन की तरफ से इस नौसैन्य अभ्यास में एक विशिष्ट श्रेणी का युद्धपोत, आरएसएस स्टीडफ़ास्ट, एक एस-70बी नौसैन्य हेलीकॉप्टर, एक विक्ट्री क्लास मिसाइल पोत, आरएसएस विगौर, एक आर्चर श्रेणी की पनडुब्बी और एक फॉक्कर- 50 समुद्री निगरानी विमान ने हिस्सा लिया। सिंगापुर गणराज्य की वायु सेना (आरएसएएफ) के चार एफ-16 लड़ाकू विमानों ने भी वायु रक्षा अभ्यास के दौरान इसमें भाग लिया।

वर्ष 1994 में शुरू किया गया, सिम्बेक्स किसी भी विदेशी नौसेना के साथ भारतीय नौसेना का सबसे लंबा चलने वाला निर्बाध द्विपक्षीय नौसैन्य अभ्यास है। मौजूदा कोविड महामारी की चुनौतियों के बावजूद इस महत्वपूर्ण अभ्यास श्रृंखला की निरंतरता को बनाए रखना दोनों देशों के बीच द्विपक्षीय रक्षा संबंधों की मजबूती को और शक्ति प्रदान करता है। अभ्यास के विभिन्न चरणों के दौरान महामारी की बाधाओं के बावजूद, दोनों नौसेनाएं कई चुनौतीपूर्ण गतिविधियों का निर्बाध और सुरक्षित संचालन कर सकीं, जिनमें हथियारों से फायरिंग और उन्नत नौसैनिक युद्ध कौशल शामिल हैं, इनके अलावा पनडुब्बी रोधी, एंटी-एयर और सतह पर मोर्चा संभालने के युद्ध अभ्यास भी किये गए हैं। इस अभ्यास की विशिष्टता और जटिलता दोनों नौसेनाओं के बीच हुई अंतःक्रियाशीलता का पर्याप्त प्रमाण है।

सिम्बेक्स का इस वर्ष का संस्करण एक विशेष अवसर भी है, क्योंकि यह नौसैन्य अभ्यास भारत की आज़ादी के 75 वर्ष पूरे होने के अवसर पर आयोजित किये जा रहे समारोहों के दौरान ही किया गया है। सिम्बेक्स- 2021 की सफलता आने वाले वर्षों में द्विपक्षीय साझेदारी को ज़्यादा मजबूत करने के लिए दोनों पक्षों के आपसी संकल्प का एक और उदहारण है।

मौजूदा महामारी से संबंधित चुनौतियों के कारण, इस वर्ष के सिम्बेक्स को सिंगापुर की नौसेना द्वारा दक्षिण चीन सागर के दक्षिणी किनारे पर 'एट-सी ओनली' अभ्यास के रूप में बिना किसी मानवीय संपर्क के आयोजित करने की योजना बनाई गई थी।

भारत-सिंगापुर रक्षा संबंध समग्र द्विपक्षीय संबंधों का एक बहुत ही महत्वपूर्ण पहलू हैं और ये पारंपरिक सेना से सेना के आदान-प्रदान से लेकर एचएडीआर और साइबर सुरक्षा तक सहयोग के एक बहुत व्यापक स्पेक्ट्रम को कवर करते हैं। दोनों नौसेनाओं का एक-दूसरे के समुद्री सूचना संलयन केंद्रों में प्रतिनिधित्व है और हाल ही में आपसी पनडुब्बी बचाव सहायता एवं सहयोग के एक समझौते पर भी हस्ताक्षर किए गए हैं।

https://pib.gov.in/PressReleasePage.aspx?PRID=1752051

The Indian EXPRESS

Sat, 04 Sept 2021

Formation heads of Southern Command meet in Pune, discuss border security

The Southern Command of the Indian Army tweeted on Friday morning, "Southern Command Formation Commanders Conference is being held from 2 to 3 September 2021 at Pune to review the prevailing security and operational situation along our borders."

By Sushant Kulkarni

Pune: A two-day conference of formation commanders of the Southern Command was held on Thursday and Friday in Pune to review the prevailing security situation along the border regions and to deliberate on the process of theaterisation.

A two-day conference of formation commanders of the Southern Command was held on Thursday and Friday in Pune to review the prevailing security situation along the border regions and to deliberate on the process of theaterisation.

The Southern Command of the Indian Army tweeted on Friday morning, "Southern Command Formation Commanders Conference is being held from 2 to 3 September 2021 at Pune to review the prevailing security and operational situation along our borders."

The conference was attended by the commanders of the various Corps and Division formations within the Southern Command and was chaired by Southern Army Commander Lt Gen J S Nain. Officials from the key Naval and IAF formations from the area of responsibility of the Southern Command also attended the conference.

The Pune-headquartered Southern Command comprises two Corps, with their headquarters located at Jodhpur and Bhopal. Among the static formations are the 'Maharashtra, Gujarat and Goa Area', with its headquarters in Mumbai, and the Dakshin Bharat Area, with its headquarters at Chennai.

Conferences of Army Commanders, Air Force Commanders and Naval Commanders take place on a regular basis to review various operational, logistics, training and administrative aspects within individual services. Tri-services commanders' conferences are also held on a regular basis to strengthen and promote joint-ness amongst the three services.

On the same lines, conferences of commanders of the formations within various Army Commands are also held on a regular basis to discuss operational issues and those related to preparedness.

In the conference that concluded on Friday in Pune, deliberations were held on security and operational scenarios in the border regions in the area of responsibility of the Southern Command, preparedness of various key formations and the process of theaterisation. The process of theaterisation entails integration of the Army, Navy and the Air Force to form individual theatre commands. The theatre commands can be formed with specific geographical areas as focus or focus on one dimension — like Maritime Command or Air Defence Command.

One of the key subjects allocated to the Department of Military Affairs (DMA), headed by the Chief of Defence Staff, is, "Facilitation of restructuring of Military Commands for optimal utilisation of resources by bringing about joint-ness in operations, including through establishment of joint/theatre commands."

Because of the geography, combined with the presence of Indian Navy's and Indian Air Force's command formations, the Army's Southern Command has been key for tri-services integration. In its area of responsibility, Southern Command has eleven states and four union territories, covering

nearly 41 percent of the country's landmass. Its formations, establishments and units are spread over 19 cantonments and 36 military stations.

https://indianexpress.com/article/cities/pune/formation-heads-of-southern-command-meet-in-pune-discuss-border-security-7487736/

The Indian EXPRESS

Sat, 04 Sept 2021

SPPU sets up Chair of Excellence to study and publish works on India's military history

From among over 90 university applications received by the MoD, about 28 were shortlisted and SPPU was the only one selected for establishing the centre of excellence

Pune: The Savitribai Phule Pune University (SPPU) has established a one-of-its-kind Chair of Excellence (CoE) in the country that will focus on publishing India's military history, dating back to the pre-colonial era and beyond.

SPPU officials and the Ministry of Defence (MoD) inked a three-year Memorandum of Understanding (MoU) in this regard during a ceremony held in Pune Friday. (File Photo)

Officials of SPPU and the Ministry of Defence (MoD) inked a three-year Memorandum of Understanding (MoU) in this regard during a ceremony held in Pune on Friday. The MoD has offered a sum of Rs 2 crore to SPPU's Department of Strategic Studies, which will house this centre.

"The CoE will focus on tracing India's gallantry history and understanding the changes that happened over time. The centre will work on two aspects — one, to sensitise young students aged 8 to 18 about Indian history and the other — to bring out publications and small modules on e-learning platforms on the subject so that India's vibrant history is taken to the larger masses," said SPPU Vice-Chancellor Nitin Karmalkar.

From among over 90 university applications received by the MoD, 28 were shortlisted and SPPU was the only one selected for establishing this CoE.

Mayank Tewari, joint secretary (Establishment/Planning/Training), MoD, said that SPPU was among the most competent entrants for setting up this CoE and expressed the desire that the MoU with SPPU last beyond the stipulated three years.

He said, "The setting up of the CoE is another step by the MoD to reach out to the larger masses and showcase the excellent works done by India's Armed Forces, both in recent years and from the past. The CoE will handle one aspect of writing what has happened historically, but we can also work on what will happen in the future."

Talking of chalking out plans for future collaborations, Tewari said the MoD was keen to work with SPPU and believes that the university is capable of meeting the ministry's short and long-term requirements. "Based on this partnership, we need to develop an institutional mechanism to take forward a lot of SPPU's ongoing research on current areas of interest that have great value for the country as a whole," he said. Karmalkar further said that over the next three years, the newly-established CoE will work on publishing papers and books, and organising lecture series so that every important aspect from India's history is taken to the masses.

He also said the university was working closely with the governments of Punjab and Madhya Pradesh in an effort to trace the history of the Maratha empire. "We are in the process of procuring the documents pertaining to Maratha history from these state governments," said the V-C.

https://indianexpress.com/article/cities/pune/sppu-inks-pact-with-defence-ministry-to-work-on-indias-military-history-7486996/

INDIA TODAY

Sun, 05 Sept 2021

Why India could be leasing a second nuclear powered attack submarine from Russia

New Delhi signed a $3 billion lease deal with Moscow in 2019 for the Chakra-3 submarine. But with growing Chinese naval presence and delays in its own nuclear submarine project, India needs as many submarines as it can get

By Sandeep Unnithan

New Delhi: Russian President Vladimir Putin is set to travel to New Delhi later this year for his first in-person summit meeting with Prime Minister Narendra Modi since the onset of the pandemic. Both countries are close strategic partners and have a thriving defence partnership. India has signed or is negotiating defence deals with Russia worth over $15 billion (Rs 1.09 lakh crore). The deals include those for frontline military equipment, from long-range missiles to fighter jets and assault rifles, to modernise its armed forces.

A Russian Navy Akula powered attack submarine

But it is the prospect of India leasing a second nuclear-powered attack submarine (SSN)—for which both sides have opened discussions—that is intriguing. This is because India already hopes to induct one Russian SSN into its fleet by 2026. India concluded a $3 billion (Rs 22,000 crore) deal with Russia in 2019 to modernise and upgrade the 'Bratsk', an Akula-class nuclear-powered attack submarine—now called 'Chakra-3'.

SSNs are true submarines in that they can stay and operate under water almost indefinitely; their endurance is limited only by food supplies for the crew. They are also equipped with a range of tactical weapons, such as torpedoes, anti-ship cruise missiles and land-attack cruise missiles. They form part of battle groups centred around aircraft carriers and are capable of independently projecting power into heavily contested enemy waters and performing escort duties for ballistic missile submarines (SSBNs).

Acquiring a second SSN will enable the navy to operate two independent carrier battle groups, centred around the INS *Vikramaditya* and INS *Vikrant*, each with one SSN. (INS V*ikrant* is currently in sea trials and will join the Navy later next year.) The two SSNs can also perform escort duties for India's fleet of four Arihant-class SSBNs, all of which will be in service by the end of this decade.

India leased its first SSN from the former Soviet Union between 1987 and 1991. In the mid-1990s, then Navy Chief Admiral Vishnu Bhagwat resumed discussions to lease two nuclear submarines from Russia. This was whittled down to just one unit when the inter-governmental agreement was finally signed in the early 2000s.

Now, nearly two decades later, the Navy seems to be going back to its original plan of leasing two SSNs. Navy chief Admiral Karambir Singh is believed to have broached the topic of leasing another SSN with his Russian counterparts during his three-day visit to Russia in late July. Russia indicated its willingness to refurbish and lease out one or more of its old Akula-class SSNs. The Akula was the former Soviet Union's best and most widely known SSN. Fifteen or more such vessels were either being built or in service when the Soviet Union broke up three decades ago. And while Russia is replacing its Akulas with the newer 'Yasen' class, it still has nine Akulas in service. Several of them are either in refit or in a half-finished state, which will allow the Indian Navy to complete them to its own requirements. It will take Russia only six years or less to

refurbish and modernise another SSN. The Navy's keenness to rapidly acquire submarines has to do with a perilous fall in its underwater capabilities at a time when China has begun the largest naval modernisation by any country since the Cold War.

The Navy has projected a requirement for six SSNs but has none at present. It will be over a decade before the first of its six indigenously designed and constructed Project 76 SSNs joins the fleet. Even the conventional submarine arm is severely handicapped. The bulk of the Navy's fleet of 15 conventional submarines is over 30 years old, which is near the end of their design lives. They are being given life-extension refits in Indian and Russian shipyards. An ambitious Rs 45,000 crore Project 75I to indigenously build six large conventional submarines, which can operate near the maritime chokepoints of the Indonesian islands, is running over 15 years behind schedule and will not deliver the first submarine before 2030.

https://www.indiatoday.in/india-today-insight/story/why-india-is-leasing-a-second-nuclear-powered-attack-submarine-from-russia-1849277-2021-09-04

WION

Mon, 06 Sept 2021

India, Nepal to hold annual joint military exercise from September 20

By Saloni Murarka

Story highlights

Nepal and Indian Army personnel will participate in the 15th edition of two-week joint military exercise Suryakiran from September 20. Nepal Army Spokesperson Santosh Ballav Poudyal said the event will take place in Pithoragadh of India

Kathmandu: Nepal and Indian Army personnel will participate in the 15th edition of two-week joint military exercise Suryakiran from September 20.

Nepal Army Spokesperson Santosh Ballav Poudyal (file photo). Photograph:(Others)

Speaking to WION, Nepal Army Spokesperson Santosh Ballav Poudyal said the event will take place in Pithoragadh of India.

"Nepali Army personnel participating in the exercise will travel to Pithoragadh in India. The event will take place from September 20 to October 3. As many as 300 Nepali Army personnel will participate along with similar number of Indian Army personnel," Poudyal told WION.

The Army Spokesperson said this comes after the series of discussion that took place during the visit of Nepalese army delegation to India recently to meet their Indian counterparts.

Suryakiran is the biggest of cross-country military exercise that Nepal participates in, in terms of the number of personnel involved.

He confirmed that Nepal and India alternately host each edition of the exercise.

"The area of focus in the exercise will be counter insurgency and general warfare technique. The exercise had to be postponed in 2020 due to the pandemic," said Poudyal.

When asked what safety protocols will be carried out due to Covid, he said, "All personnel will be double vaccinated and PCR tests will be conducted before they join the event. Of course, all other COVID-19 safety protocols will be followed."

Speaking about the invitation of Indian Army to retired Nepali Army Chiefs of Staff, he said, "Around eight retired Army Chiefs have been invited and not everybody has confirmed their participation. The programme will take place in New Delhi this September."

https://www.wionews.com/india-news/india-nepal-to-hold-annual-joint-military-exercise-from-september-20-410856

The EurAsian Times

Sun, 05 Sept 2021

Pakistan Navy inducts new spy plane that can 'Track & Hunt Down' Indian Submarines

By Aritra Banerjee

Pakistan has inducted a new long-range spy plane to keep an eye on Indian submarines similar to what the Indian Navy is doing with China. Will this be enough of a credible deterrent against Indian underwater vessels?

Pakistan Navy's long-range maritime patrol aircraft, Sea Sultan. (via Twitter)

A long-range maritime patrol aircraft, the 'Sea Sultan' has been inducted into the Pakistan Navy as part of its ongoing modernization program. The Sea Sultan is a twin-engine modified Embraer Lineage 1000 jet procured to replace its fleet of long-range Lockheed Martin manufactured P-3 Orion spy planes.

Speaking on condition of anonymity, Pakistani defense analysts shared some details about the Sea Sultan and its capabilities with The EurAsian Times.

A Rawalpindi-based defense journalist and researcher said *seven to eight more are expected to be pressed into service after the completion of the project*. However, he did not disclose how long it will take for the aircraft to be operational.

Joseph P. Chacko, an Indian defense analyst, said it could be anywhere between two and three years before the Sea Sultan can be operational.

He said the procurement was in response to the order of 18 Poseidon P-8 LRMPAs placed by the Indian Navy and claimed that the induction of the Sea Sultan's could have far-reaching implications for the Indian submarines, which have long remained an active threat to Pakistani warships.

The Pakistan Navy currently uses the Leonardo Sea Spray radar-equipped RAS 72 Sea Eagle aircraft. This is capable of carrying out short-range maritime patrols. The Embraer Lineage 1000 jet will be specially customized for long-range operations and the Italian firm Leonardo has once again been called in for the required modification.

Interestingly, both Pakistan's C-27J Spartan and the Franco-Italian ATR 42 aircraft and ATR 72 had been modified by the company for maritime applications in the past. South Africa's Paramount Group has been selected for the Sea Sultan's pre-conversion maintenance, repair, and overhaul.

According to the researcher from Rawalpindi, the Sea Sultans will not be bought from a single manufacturer and instead will be purchased from different private entities. He said that Sea Sultan is currently an empty shell, none of the electronics, which make the aircraft operational for maritime patrolling have been added yet.

The analyst refused to divulge any information on the aircraft's potential configuration as the details are classified. However, he vaguely described it as being in the works of possessing numerous subsystems, including an internal weapons bay.

He confirmed that the Sea Sultan will have Electronic Counter Measures, Electronic Support Measures, and Electronic Warfare systems in line with any modern Anti-Submarine Warfare platform.

He highlighted that that aircraft will have offensive capabilities such as the ability to fire anti-ship missiles. The analyst summarized that Anti Surface Warfare, ASW, and Intelligence Surveillance and Reconnaissance missions will be the Sea Sultan's key roles.

Another Pakistani analyst said Sea Sultan has not been modified yet. “Only the first Lineage 1000 was inducted to formally mark the program. But 3 Lineage 1000s including this are now undergoing conversion with Paramount group handling the overhaul of the aircraft before they are sent to conversion.”

The Pakistani analysts place the projected cost of the Sea Sultan to be anywhere between $50 and 85 million, while its modifications may cost $20-30 million per aircraft.

They agreed that the only aircraft capable of meeting the maximum takeoff weight, endurance, and speed could only be met by the Embraer Lineage 1000, but its production was discontinued by the original company. This prompted Pakistan to explore multiple vendors.

Implications For India

This development has inevitably seen defense enthusiasts making benign comparisons between the newly inducted Pakistan Navy’s Sea Sultan, and its Indian Naval counterpart, the Poseidon P-8 (P-8I Neptune).

Chacko said the primary task of Sea Sultan will be to “hunt down” Indian Naval submarines and play a role in anti-ship operations.

“Pakistan does not have escorts for the plane for long-range operations in wartime. This means that the Sea Sultan will only be good only for peacetime operations and in wartime, the plane will have longer endurance in a nearby area where it can be accompanied by fighter aircraft,” he added.

The Indian Navy has far superior LRMPA assets, the source concluded. However, the Rawalpindi-based analyst said that the development is in its nascent stages and the jury is still out. “Only time and circumstances will tell.”

‘India Needs To Keep A Close Watch’

Commodore G Prakash (Retd), a veteran Indian Navy aviator, shared his professional views over the induction of the Sea Sultan exclusively with The EurAsian Times.

“Any LRMPA which the Pakistan Navy inducts is bound to be a force multiplier for them, especially if it is capable of ASuW, ASW, ESM and such other standard assets of a good modern MPA. We must keep a close watch, study its operational capabilities and cater to adequate Anti Air/Anti-Missile capabilities to counter them.”

“The fact that they have chosen an unproven civil aircraft like the Embraer Linear 1000 to replace the much-proven P3 shows that they have been forced to make a compromise choice, probably for want of good offers from around the world. Converting this aircraft designed for civil flying, for maritime military use is not going to be easy.

“Design inadequacies with respect to engines, airframe, power generation systems, etc. are bound to be a major challenge. Equally challenging will be the task of equipping the aircraft with weapons, sensors, tactical mission systems etc., which will necessitate extensive structural changes. All this will also increase the basic weight of the aircraft, with a negative impact on its overall operational capabilities.

“While they may not have the Americans or Europeans to help out with the sensors, weapons etc. now, assistance from China and Turkey can take them forward, albeit, with major challenges in getting the necessary clearances for safe flying of the modified aircraft. This may be good enough for them to develop a decent LRMPA,” he added.

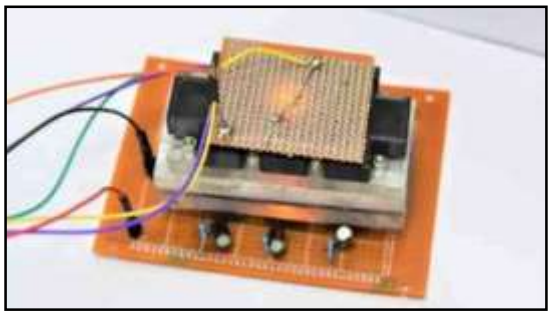
https://eurasiantimes.com/pakistan-navy-inducts-new-spy-plane-that-can-track-hunt-down-indian-submarines/

THE TIMES OF INDIA

Sun, 05 Sept 2021

IISc, ISRO develop device for bio experiments in space

Bengaluru: In order to understand how microbes behave in extreme environments, a team of researchers from the Indian Space Research Organisation (ISRO) and Indian Institute of Science (IISc) has developed a modular, self-contained device to cultivate microorganisms, which could enable scientists to carry out biological experiments in outer space.



Understanding how microbes behave in extreme environments could provide valuable insights for human space missions such as Gaganyaan, the IISc said.

In a study published in 'Acta Astronautica', the team has shown how the device can be used to activate and track the growth of a bacterium called Sporosarcina pasteurii over several days, with minimal human involvement.

"Understanding how such microbes behave in extreme environments could provide valuable insights for human space missions such as 'Gaganyaan,' India's first crewed spacecraft set to be launched in 2022," IISc said in a statement shared with TOI.

Pointing out that in recent years, scientists have been increasingly exploring the use of lab-on-chip platforms — which combine many analyses into a single integrated chip — for such experiments, IISc said there are additional challenges to designing such platforms for outer space, when compared to the lab.

Koushik Viswanathan, assistant professor, department of mechanical engineering, IISc, and senior author of the study, said: "It has to be completely self-contained. Besides, you can't expect the same operating conditions as you would in a normal laboratory setting… and you can't have something that guzzles 500W, for example."

The new device uses an LED and photodiode sensor combination to track bacterial growth by measuring the optical density or scattering of light, similar to spectrophotometers used in the lab.

It also has separate compartments for different experiments. IISc said each compartment or 'cassette' consists of a chamber where bacteria and a nutrient medium can be mixed to kickstart growth, by flicking on a switch remotely.

https://timesofindia.indiatimes.com/india/iisc-isro-develop-device-for-bio-experiments-in-space/articleshow/85938127.cms

जागरण

Sun, 05 Sept 2021

अंतरिक्ष में जीव विज्ञान संबंधी उपकरण का निर्माण, सूक्ष्मजीवों को विकसित करने में होगा मददगार

ISRO और IISC ने अंतरिक्ष में जीव विज्ञान संबंधी एक उपकरण को विकसित किया है। इस उपकरण के जरिये बाह्य अंतरिक्ष में विज्ञानी प्रयोग कर सकेंगे। IISC और ISRO के दल द्वारा तैयार किए गए उपकरण में जीवाणु विकास पर नजर रखने के लिए एलइडी और फोटोडायोड सेंसर है।

By Monika Minal

बेंगलुरु: भारतीय विज्ञान संस्थान (IISC) और भारतीय अंतरिक्ष अनुसंधान संगठन (ISRO) के अनुसंधानकर्ताओं ने एक सर्व सुविधायुक्त, आत्मनिर्भर और माड्यूलर (अनेक हिस्सों वाला) उपकरण बनाया है जो सूक्ष्मजीवों को विकसित करने में मददगार होगा। इस उपकरण की मदद से विज्ञानी बाह्य अंतरिक्ष में जीव विज्ञान संबंधी प्रयोग करने में सक्षम हो सकेंगे।

बेंगलुरु स्थित IISC की ओर से जारी एक वक्तव्य में बताया गया कि 'एक्टा एस्ट्रोनाटिका' में प्रकाशित अध्ययन में अध्ययन दल ने दिखाया कि स्पोरोसारसिना पास्च्यूरी नाम के जीवाणु के विकास पर नजर रखने और उसे उत्प्रेरित करने के लिए उपकरण का किस तरह से इस्तेमाल किया जा सकता है, वह भी इस तरह जिसमें मानवीय दखल कम से कम हो।इसमें बताया गया कि इस तरह के जीवाणु कठोर पर्यावरण में किस प्रकार का व्यवहार करते हैं, यह समझने पर मानव अंतरिक्ष मिशन मसलन इसरो द्वारा नियोजित भारत के पहले मानव वाले अंतरिक्ष यान गगनयान के बारे में महत्वपूर्ण जानकारी मिल पाएगी।

अध्ययन से जुड़े वरिष्ठ अध्ययनकर्ता और मैकेनिकल इंजीनियरिंग विभाग के सहायक प्राध्यापक कौशिक विश्वनाथन ने कहा कि इसके पूरी तरह से सर्व सुविधायुक्त होने की जरूरत है, जिसकी किसी और पर निर्भरता नहीं हो। इसके अलावा सामान्य प्रयोगशाला की तरह आप समान संचालन परिस्थितियों की उम्मीद नहीं कर सकते। IISC और ISRO के दल द्वारा तैयार किए गए उपकरण में जीवाणु विकास पर नजर रखने के लिए एलइडी और फोटोडायोड सेंसर है। इसमें भिन्न प्रयोगों के लिए विविध कक्ष हैं और प्रत्येक कक्ष से डाटा एकत्रित और सुरक्षित किया जाएगा।

https://www.jagran.com/news/national-isro-and-iisc-developed-a-biological-tool-in-space-21992163.html

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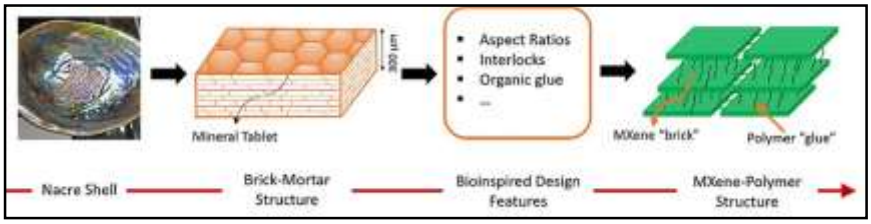
Sat, 04 Sept 2021

Developing multifunctional composite materials for aerospace applications

Materials for aerospace applications face many challenges. The structure of an aircraft must be light yet strong. Structural components such as the wings or fuselage must resist damage while at the same time in some areas be able to handle high temperatures from engine exhaust. An aircraft's electronic components must also be shielded from electrical surges due to lightning strikes or other interference.



An oyster shell's inside is lined with nacre or mother-of-pearl, which can provide an inspiration for the design of MXene-based composites. Credit: South Dakota State University

Developing new materials that meet these multiple demands is what assistant professor Anamika Prasad of South Dakota State University's Department of Mechanical Engineering has been working on in collaboration with the materials research group at Wright-Patterson Air Force Base.

Prasad received an eight-week U.S. Air Force Research Laboratory fellowship last summer to work with the materials and manufacturing directorate and is continuing her research on MXene-based composites through a second fellowship this summer. The fellowship program, sponsored by the Air Force Office of Scientific Research, builds relationships with full-time science, mathematics and engineering faculty at U.S. colleges and universities by giving them an opportunity to perform research at an Air Force Research Lab.

"It was an amazing collaborative experience working alongside AFRL scientists and summer fellows (faculty and students)," said Prasad, whose research at SDSU focuses on using plant-inspired structures to design and manufacture composite materials.

Faculty normally perform research on-site, but the COVID-19 pandemic led to Prasad working remotely and shifted the focus to computational analysis of MXenes, a new class of two-dimensional engineering materials. A paper that describes the results of their summer 2020 research is under review by the MRS Bulletin Impact.

AFRL research materials engineer Dhriti Nepal said, "It is a great pleasure working with professor Prasad. Her insights on bioinspired structures for mechanics and multiscale modeling has been exceptionally valuable for designing next-generation composites."

Focusing on multifunctionality

Engineering materials typically fall into individual buckets, Prasad said. "If we want materials that are tough, we choose a metal; if we want a material designed for flexibility and low density, we choose a polymer or plastics; if we want high strength and heat resistance, we choose a ceramic." However, for aerospace applications, the emphasis is on multifunctional materials.

"Multifunctionality is built into natural systems," Prasad said. Fast-growing plants must be flexible yet maintain optimum strength and provide a resilient path for water and thermal management as the structure grows. Shells and exoskeletons are examples of materials with a good balance of toughness and strength while maintaining properties, such as surface smoothness for defense against parasites.

MXene—pronounced like the name Maxine, discovered in 2011 at Drexel University, has unique property combinations. It can be made into highly conductive and strong thin films in layers

of only a few atoms, similar to graphene. "This new two-dimensional material has very high strength in a plane when you pull it and is very conductive and heat resistant," Prasad said.

Unlike the single-atom (carbon) of graphene, MXene's 2D layer structure can have a wide range of compositions, where M stands for early transition metal, such as titanium or chromium, and X stands for carbon and/or nitrogen. "Because the compounds are not just a single element, we can play around with them, functionalizing the surface layers for different applications," Prasad said. Other researchers estimate more than a million MXene alloy compounds are yet to be discovered.

However, pure MXene films have a thin, flaky structure that makes it difficult to create a composite combination that retains the unique properties while providing structural durability. "If you add polymer to MXenes to form a composite, it provides structural stability, but the composites may lose their main functionality of conductivity. To make them useful, we must find pathways of composite design that do not alter their unique properties," Prasad said.

AFRL research chemist Vikas Varshney said, "Combining multifunctionality with structural viability in such composites is crucial for a number of Air Force structural applications. Working with Dr. Prasad, we plan to model and explore as much of a phase space as possible towards understanding the role of different composite parameters in governing their structural properties, eventually guiding experimentalists towards developing structurally sound multifunctional composite materials."

Analyzing MXene structures

Prasad compared the structure of the thin, flaky individual tablets of MXene-polymer composites to the layered bricks and the mortar structure present in some natural systems as a means of gaining inspiration for the composite design.

"Many shells, for example, internally have a brick-mortar structure in which brick or tiles are polygons and are rigid. All the tiles are dispersed within a polymeric mortar, which binds the tiles and allows them to give or flex," she said.

The tiles themselves have a wavy, rough structure, Prasad continued. This unevenness makes the tiles interlock. "When a crack occurs, it travels the zigzag path through the mortar-like polymer, which provides sacrificial joints that break to give it (the piece) further strength and fracture toughness."

Last summer, she and her AFRL teams analyzed natural composites to understand how their unique design features could be applied to MXenes. This summer, she continued tasks to develop simulations to model MXene-based composites and surface interactions.

"We want to predict their macroscale response from what's happening at an atomic level of material design," Prasad. Beginning this fall, senior mechanical engineering major Jordan VonSeggern of Elk Point, South Dakota, will join her research group to continue developing the model through an AFRL-supported internship.

Through her collaboration with AFRL researchers, Prasad has "found a group of people who are really supportive and have helped me explore new ideas." She plans to continue to apply what she has learned about MXene-based composites to her research at SDSU.

"I can create MXene-based composite materials and functionalize the layers to provide the capability to sense the growth of plants or to see what is flowing inside the xylem tissues," she said. Tough, flexible films made using MXenes can be used to create biomedical sensors that measure electrical conductivity as different nutrients flow through plant tissues.

This spring, Prasad received an SDSU Research, Scholarship and Creative Activities Challenge Fund grant to begin developing simulation tools to predict the properties of MXene-based composites and bring machine learning capabilities in her materials research. SDSU's RSCA Challenge Fund helps faculty generate preliminary data to increase their ability to compete for external funding.

Provided by South Dakota State University

https://phys.org/news/2021-09-multifunctional-composite-materials-aerospace-applications.html

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Tapping into magnets to clamp down on noise in quantum information

The U.S. Department of Energy (DOE) has recently funded both DOE's Argonne National Laboratory and the University of Illinois Champaign-Urbana (UIUC) in a new project related to quantum information science. The Argonne team will bring to the project its expertise in coupling superconducting and magnetic systems. The UIUC team will contribute its world-class capabilities for developing new magnetic materials for quantum systems.

Researchers at Argonne have demonstrated an on-chip quantum circuit and realized strong coupling between a superconducting resonator and a magnetic device. This earlier research introduced a new platform for investigating quantum information processing. Credit: Ellen Weiss/Argonne National Laboratory.

"Quantum information science promises new and different ways in which scientists can process and manipulate information for sensing, data transfer and computing," said Valentine Novosad, a senior scientist in Argonne's Materials Science division. "UIUC is a perfect partner for us to realize breakthrough discoveries in this area."

In the emerging field of quantum information science, microwaves may play a fundamental role because their physical properties enable them to provide desired quantum functionality at temperatures near to absolute zero (minus 460 degrees Fahrenheit)—a necessity because heat creates errors in quantum operations. However, microwaves are susceptible to noise, which is unwanted energy that disturbs signal and data transmission.

The research team will be exploring whether magnons could partner with microwave photons to ensure that microwaves can only travel in one direction, thereby essentially eliminating noise. Magnons are the fundamental excitations of magnets. By contrast, microwave photons result from electronic excitations producing waves like those in a microwave oven.

The Argonne scientists will build upon their earlier efforts to create a superconducting circuit integrated with magnetic elements. The magnons and photons talk to each other through this superconducting device. Superconductivity—the complete absence of electrical resistance—allows coupling of magnons and microwave photons at near to absolute zero.

"This capability presents unique opportunities for manipulating quantum information," explained Yi Li, a postdoctoral appointee in Argonne's Materials Science division.

In the past, Argonne has played major roles in the development of superconducting detectors and sensors for understanding the workings of the universe at the most fundamental level. "We will benefit from the valuable knowledge gained in these highly successful projects in cosmology and particle physics," Novosad said.

The UIUC researchers will be searching for magnets that work at ultracold temperatures. They will be testing known and new material systems to find candidates that can handle an ultracold environment and operate in a real quantum device.

"Many magnets work well with microwaves at room temperature" said Axel Hoffmann, Founder Professor in Engineering at UIUC and the leader of this project. "We need materials that work also well at much lower temperatures, which may completely change their properties."

"If we are successful within these three years, we will have magnetic structures directly integrated with quantum circuitry," Hoffmann said. "This work could also apply to non-quantum devices for sensing and communication, such as in Wi-Fi or Bluetooth technologies."

This new project is another example of how Argonne and UIUC are leading the way toward a quantum future. Argonne not only conducts cross-disciplinary research within its large portfolio of QIS projects but also leads Q-NEXT, one of five QIS research centers DOE established in August 2020. Similarly, UIUC supports a wide range of quantum information projects, such as Q-NEXT, through the Illinois Quantum Information Science and Technology (IQUIST) Center.

Provided by Argonne National Laboratory

https://phys.org/news/2021-09-magnets-clamp-noise-quantum.html

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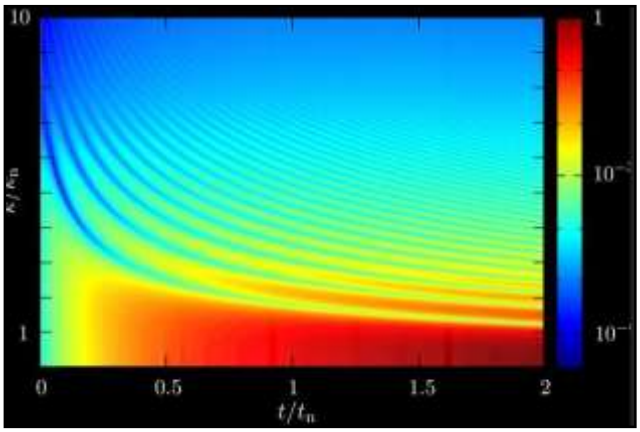
Unraveling quantum interactions of 100,000 atoms in gases

Silvia Musolino defended her Ph.D. on new theoretical insights in quantum physics by studying gases at the lowest temperatures consisting of many atoms.

A practical way to study quantum mechanics is provided by gases that have extremely low density and consist of many atoms, often more than one hundred thousand, cooled down to temperatures close to the absolute zero. Silvia Musolino studied different types of interactions between these atoms, providing new pathways for future research on new technologies such as quantum computers.



Credit: Eindhoven University of Technology

Quantum mechanical laws govern the physics at the atomic scale and is distinguished by classical mechanics, which deals mainly with natural phenomena we can see, hear, or touch. However, even quantum mechanics influences our daily life. Transistors, which are crucial components of electronic devices, are based on quantum mechanical effects. Moreover, quantum mechanics paves the way for new technologies that may strongly impact our lives, such as quantum computers.

Atoms moving all together

In gases with extremely low density, much lower than the air density, atoms can barely see each other. The behavior of these systems depends only on a few parameters, for example density and temperature. This makes it possible to construct very general theoretical models able to describe many and very different systems.

In quantum mechanics atoms behave as waves with a characteristic length scale, called the thermal wavelength. At low temperatures, this scale becomes larger than the spacing between two atoms, and so the waves associated with the atoms can be summed together leading to collective phenomena, like Bose-Einstein condensation.

When atoms undergo Bose-Einstein condensation, they start moving all together in the same direction and, even if they are many, they behave as one single entity. During her thesis project, Musolino analyzed this phenomenon using the one-body correlation function, which quantifies the mutual connection of the atoms inside the Bose-Einstein condensate.

Formation of composites

Furthermore, she studied other types of correlations considering interactions between atoms. Interactions are characterized by a parameter called the scattering length, which can be interpreted

as the distance from the atom in which the interactions effectively work. Strong interactions mean that the scattering length is much larger than the spacing between the atoms. In particular, Musolino considered strong interactions induced by a rapid change of the scattering length in time; this makes the correlations dependent on time and drives the system out of equilibrium.

An atom is a boson if the number of neutrons in the nucleus is even, otherwise it is a fermion. Bosonic atoms like to stay together, meaning that they can occupy the same state; instead, fermions are 'less social' and two fermions can occupy the same state only if they have two different spins, which is an intrinsic property of the particle.

Since the formation of composites depends on the type of atoms, Musolino developed a general theoretical framework able to track the dynamics of few-body correlations in a system made of many atoms and applied this method to bosonic and fermionic gases.

In this model, she also included experimental features, like the presence of a container trap, which makes the atoms not entirely free to move, and made numerous comparisons with existing experimental data—an important finding. Within her theory, she showed how the presence of composites changes the dynamics of the entire many-body system providing new pathways for future research.

Provided by Eindhoven University of Technology

https://phys.org/news/2021-09-unraveling-quantum-interactions-atoms-gases.html

COVID-19 Research News

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Mon, 06 Sept 2021

Covid hospitalisation rate for children and teens increases in US, Says Study

Latest research from the Centers for Disease Control and Prevention states that COVID related paediatric hospitalisations have grown massively during summer

By Anwesha Majumdar

The latest research from the Centers for Disease Control and Prevention states that COVID-19 related paediatric hospitalisations have grown massively during the summer as the highly infectious delta form spread across the United States. As per the new study, the hospitalisation rate for children and teens in the United States climbed about five times from late June to mid-August, yet they are still somewhat lower than the maximum record in January.

Credit: AP/ Pixabay

The research states that vaccination has created differences in the hospitalisation rate. According to the researchers, the hospitalisation rate among unvaccinated teenagers was ten times higher than in vaccinated teens during this current outbreak. Another research reveals that the rate of paediatric admissions was roughly four times higher in states with the lowest immunisation coverage than the states with the highest percentages of vaccination.

The findings announced on Friday did not specify clearly whether delta produces greater severe illness in children and teens than other forms of the COVID-19 virus. The increased contagiousness of the variation might explain the surge in paediatric hospitalizations. Moreover,

one study revealed that during June and July, when the delta variation became prevalent in the United States, the percentage of hospitalised children with severe illness did not alter.

Research findings

The rates suggested by the CDC's findings are derived from the information from two nationwide surveillance systems, which included hospitals across 49 states and Washington DC. According to one CDC report, the incidence of new coronavirus infections among children aged 17 and under has risen since July and hence, the number of COVID-19-related emergency department visits and hospital admissions has also increased. Whereas, as per the second study of CDC, Researchers reviewed data from the COVID-NET surveillance system, which contains details on hospitalizations in 99 counties throughout 14 states.

According to the researchers, 49.7% of COVID-19-related hospitalisations per 100,000 children and teenagers throughout the coronavirus pandemic lasted from March 1, 2020, to August 14, 2021. However, since July, the weekly hospitalisation rates have been rising. There were 1.4% COVID-19-related hospitalisations cases registered for every 100,000 children in the week ending August 14, compared to 0.3% during late June and early July.

On the other hand, children aged four and under have seen the greatest increase in hospitalisation rates. There was 1.9% hospitalisation per 100,000 children within that age range in the week ending of August 14, about ten times as many as in late June. However, depending on the little data collected till now, the delta variation does not seem to be altering the risk of severe illness or fatalities in children, which have remained reasonably stable and lower throughout the outbreak.

https://www.republicworld.com/world-news/us-news/covid-hospitalisation-rate-for-children-and-teens-increases-in-us-says-study.html