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Wed, 27 Apr 2022

रक्षा क्षेत्र में आत्मनिर्भर भारत के लिए संयुक्त सहयोग करेंगे आइआइटी बीएचयू और डीआरडीओ

रक्षा क्षेत्र में देश को आत्मनिर्भर बनाने के लिए आइआइटी बीएचयू और रक्षा अनुसंधान एवं विकास संगठन (डीआरडीओ) रक्षा प्रौद्योगिकियों पर मिलकर काम करेंगे और संयुक्त सहयोग करेंगे। दोनों संस्थानों के बीच परस्पर सहयोग के लिए दो दिवसीय ब्रेनस्टोर्मिंग सत्र में सोमवार व बुधवार को विचार-विमर्श किया गया। आइआइटी बीएचयू पहले से ही स्वदेशी रूप से विकसित रक्षा प्रौद्योगिकियों पर काम कर रहा है। संस्थान उत्तर प्रदेश रक्षा कारीडोर में एक नालेज भागीदार है और भारतीय अंतरिक्ष अनुसंधान संगठन (इसरो) के एक क्षेत्रीय शैक्षणिक केंद्र की मेजबानी भी करता है। संस्थान के निदेशक प्रो. प्रमोद कुमार जैन ने बताया कि डीआरडीओ के साथ नियोजित सहयोग से स्वदेशी रक्षा प्रौद्योगिकियों के विकास से संबंधित हमारे प्रयासों को मजबूती मिलेगी।

डीआरडीओ और अन्य संगठनों के साथ संयुक्त रूप से इस तरह की रक्षा संबंधी गतिविधियों का समग्र उद्देश्य भारत के रक्षा आयात को कम करने और भारत को रक्षा क्षेत्र में आत्मनिर्भर बनाना है। डीआरडीओ के विज्ञानी और आइआइटी के विभिन्न विभागों के संकाय सदस्यों के बीच पाउडर मेटलर्जी, इलेक्ट्रॉनिक और फंक्शनल पदार्थ के साथ-साथ उच्च शक्ति माइक्रोवेव स्रोतों और उपकरणों के क्षेत्र में अनुसंधान में तेजी लाने के लिए एक विस्तृत चर्चा हुई। संयुक्त रूप से रक्षा प्रौद्योगिकी विकास के लिए एक-दूसरे के हित के लिए कई क्षेत्रों की पहचान की गई है। केवल असाधारण मामलों में ही विदेशी उद्योग से रक्षा उपकरण आयात करने के भारत सरकार के निर्णय को ध्यान में रखते हुए, स्वदेशी रक्षा प्रौद्योगिकियों का विकास/उन्नयन बहुत महत्वपूर्ण हो गया है। डीआरडीओ और आइआइटी बीएचयू के बीच आपसी सहयोग इस दिशा में एक महत्वपूर्ण भूमिका अदा करेगा।

इस अवसर पर विचार-मंथन सत्र के दौरान डॉ. एस.वी. कामत, महानिदेशक (एनएस एंड एम), डॉ. हरि बाबू श्रीवास्तव, महानिदेशक (टीएम) और डॉ. कैलाश कुमार पाठक, निदेशक, डीआरडीओ मुख्यालय, नई

दिल्ली ने 20 वैज्ञानिकों की डीआरडीओ टीम का नेतृत्व विभिन्न डीआरडीओ प्रयोगशालाओं जैसे डीएमआरएल हैदराबाद, एसएसपीएल, नई दिल्ली, एलआरडीई/एमटीआरडीसी, बेंगलोर और डीएमएसआरडीई कानपुर के साथ किया। आईआईटी (बीएचयू) वाराणसी टीम का नेतृत्व आईआईटी (बीएचयू) वाराणसी के निदेशक प्रो. प्रमोद कुमार जैन ने किया। प्रोफेसर विकाश कुमार दुबे, अधिष्ठाता (आर एंड डी), आईआईटी (बीएचयू) ने सह अधिष्ठाता (आर एंड डी), डॉ संतोष कुमार के साथ इस कार्यक्रम का समन्वय किया। डीआरडीओ वैज्ञानिकों की टीम ने संस्थान के विभिन्न विभागों, सुविधाओं और प्रयोगशालाओं का भी दौरा किया। आईआईटी (बीएचयू) के निदेशक, प्रो. प्रमोद के. जैन ने अपनी समापन टिप्पणी में यह उल्लेख किया कि आईआईटी (बीएचयू) में यह उत्कृष्टता केंद्र भारत के माननीय प्रधानमंत्री के विजन के साथ रक्षा क्षेत्र में आत्मनिर्भर भारत की लिए एक महत्वपूर्ण योगदान देगा।

<https://www.jagran.com/uttar-pradesh/varanasi-city-iit-bhu-and-drdo-will-do-joint-cooperation-for-self-reliant-india-in-defense-sector-22664714.html>

THE TIMES OF INDIA

Thu, 28 Apr 2022

IIT-BHU, DRDO mull tie-up in defence tech

The Defence Research and Development Organisation (DRDO) and the Indian Institute of Technology, Banaras Hindu University (IIT-BHU) jointly organized brainstorming sessions on collaboration related to defence technologies on Monday and Tuesday. IIT-BHU is already working on various indigenously developed defence technologies. The institute is a knowledge partner in the UP Defence Corridor and hosts an academic centre of Indian Space Research Organisation (ISRO). The planned collaboration with DRDO is likely to strengthen our efforts related to developing indigenous defence technologies,” said IIT-BHU director Prof. Pramod Kumar Jain. “The aim of such defence related activities jointly with DRDO and other organisations is to decrease India’s defence imports and make India ‘atmanirbhar’ (self-reliant) in defence sector,” he added.

He said that detailed discussions/interactions took place between the scientists from DRDO and faculty members of different departments of IIT-BHU to accelerate research in the area of powder metallurgy, electronic and functional materials as well as high-power microwave sources and devices. Several areas of mutual interests were identified for defence technology development jointly. “Considering the decision of the Union government to import defence equipment from foreign industry only in exceptional cases, development/ upgrades of indigenous defence technologies has become very important,” he said, adding that the collaboration between DRDO and IIT-BHU is likely to play a crucial role in this direction. Dr. S. V. Kamat, director general (NS&M), Dr. Hari Babu Shrivastava, director general (TM) and Dr. Kailash Kumar Pathak, director, DRDO headquarter, New Delhi led the DRDO team of 20 scientists from

various DRDO labs, including DMRL, Hyderabad, SSPL, New Delhi, LRDE/MTRDC, Bangalore and DMSRDE Kanpur.

The IIT-BHU team was led by Prof. Jain, who said that this Centre of Excellence at IIT-BHU will make significant contributions towards Atmanirbhar Bharat in the defence sector aligned with the vision of the Prime Minister. The event was coordinated by the dean (R&D), Prof. Vikash Kumar Dubey and associate dean (R&D), Dr. Santosh Kumar. The team of DRDO scientists also visited different departments, facilities and labs of the institute.

<https://timesofindia.indiatimes.com/city/varanasi/iit-bhu-drdo-mull-tie-up-in-defence-tech/articleshow/91136595.cms>

PEOPLE NEWS CHRONICLE

Thu, 28 Apr 2022

The speed of 3087 kmph, the target was successfully destroyed, Akash missile showed in Jaisalmer

DRDO has carried out the test of the advanced version of Akash missile in Jaisalmer, Rajasthan. It was tested at the Pokhran Field Firing Range. Indian Army has achieved great success. The advanced version of Akash missile has been successfully test-fired. DRDO has carried out this test in Jaisalmer, Rajasthan. This Indian missile will run at a speed of 3087 kilometers per hour. It was tested at the Pokhran Field Firing Range. It has been tested in the presence of DRDO and Army officials. This missile fired has successfully destroyed its target. The missile system can target aircraft up to 30 km away and 18,000 meters altitude. The missile has the capability to target aerial targets such as fighter jets, air-to-surface missiles and cruise missiles. In the month of September last year also, this missile was successfully test-fired from the Integrated Test Range at Chandipur, Odisha. Then it tracked the unmanned aerial target and destroyed it in the air.

At present there are three variants of Akash missile in India-

Akash MK – 30 km range

Akash Mk-2 – 40 km range

Akash NG0 80 km range

Let us inform that the advanced version of Akash missile has indigenous Active RF Seeker, which increases the accuracy of identifying enemy targets. Apart from this, the temperature control device has been upgraded after going to extreme altitudes. Apart from this, many advanced technologies have also been added.

<https://peoplenewschronicle.com/the-speed-of-3087-kmph-the-target-was-successfully-destroyed-akash-missile-showed-in-jaisalmer/>

HAL kicks off key LCA airframe test

The rigorous tests will be carried out on the airframe for eight to nine years, and the successful completion will qualify the LCA (air force) Mk-1 airframe for its entire service life. State-run planemaker Hindustan Aeronautics Limited (HAL) on Wednesday kicked off key ground tests on the LCA Mk-1 (light combat aircraft) to assess the structural integrity of its airframe. (IAF) State-run planemaker Hindustan Aeronautics Limited (HAL) on Wednesday kicked off key ground tests on the LCA Mk-1 (light combat aircraft) to assess the structural integrity of its airframe and other components to meet specified airworthiness regulations, officials said.

The main airframe fatigue test (MAFT) of LCA Mk-1 began at the ground test centre of the Aircraft Research and Design Centre (ARDC) in Bengaluru. LCA MK-1 has been inducted into the Indian Air Force. It is not uncommon for fatigue assessment to be carried out after a fighter plane has joined service, officials said. “Despite the setbacks due to the Covid-19 pandemic, HAL has been able to commence the MAFT within the timelines planned,” HAL director (engineering and R&D) Arup Chatterjee said. The rigorous tests will be carried out on the airframe for eight to nine years, and the successful completion of MAFT will qualify the LCA (air force) Mk-1 airframe for its entire service life, the officials said. “As per military airworthiness requirements, MAFT has to demonstrate the capability of the airframe to withstand four times the service life,” HAL said.



State-run planemaker Hindustan Aeronautics Limited (HAL) on Wednesday kicked off key ground tests on the LCA Mk-1 (light combat aircraft) to assess the structural integrity of its airframe. (IAF)

MAFT is a critical activity for determining the structural health of the airframe or components, and it determines what the final safe operational life of the platform will be, Air Marshal Anil Chopra (retd), director-general of the Centre for Air Power Studies, said. The test plan and schedule for MAFT have been jointly devised by the designers from HAL and scientists from Aeronautical Development Agency (ADA) in coordination with the Regional Centre for Military Airworthiness under the Centre for Military Airworthiness and Certification (CEMILAC). A regulatory body under the Defence Research and Development Organisation (DRDO), EMILAC

is responsible for the airworthiness certification of military aircraft, helicopters, aero-engines and air-launched weapons.

Last year, the defence ministry awarded a ₹48,000-crore contract to HAL for 83 LCA Mk-1A jets (an advanced version of LCA Mk-1) for the IAF. The Mk-1A will have the same airframe as the Mk-1 aircraft. The first Mk-1A aircraft will be delivered to the air force by March 2024, with the rest slated to join its combat fleet by 2029. The contract for the 83 Mk-1A jets took the number of LCA variants ordered to 123. The 40 LCAs ordered by IAF are in the initial operational clearance and the more advanced final operational clearance (FOC) configurations. The LCA Mk-1A will come with a raft of additional improvements over the FOC aircraft, making it the most advanced LCA variant so far. The Mk-1A variant will come with digital radar warning receivers, external self-protection jammer pods, superior radar, advanced beyond-visual-range missiles and significantly improved maintainability. The fighter's indigenous content is expected to be around 60%, compared to 50% in the existing variants.

<https://www.hindustantimes.com/india-news/hal-kicks-off-key-ground-tests-on-lca-mk1-101651056775080.html>



Wed, 27 Apr 2022

MAFT tests of LCA Mk1 airframe starts

The Main Airframe Fatigue Test (MAFT) of Light Combat Aircraft (LCA) Mk1 airframe has started at a facility in Bengaluru. The test is being carried out by the state-owned Hindustan Aeronautics Limited (HAL) at its Ground Test Centre of the Aircraft Research and Design Centre (ARDC).

What is the MAFT Test?

This test is required to demonstrate the capability of the airframe to withstand four times the service life. This is as per the military airworthiness requirements. According to HAL, these tests will be carried out over a period of eight to nine years on the LCA (Air Force) Mk1 airframe. Once the MAFT tests are carried out successfully, the LCA (Air Force) Mk1 airframe is then fit for its full-service life.

Who plans the tests?

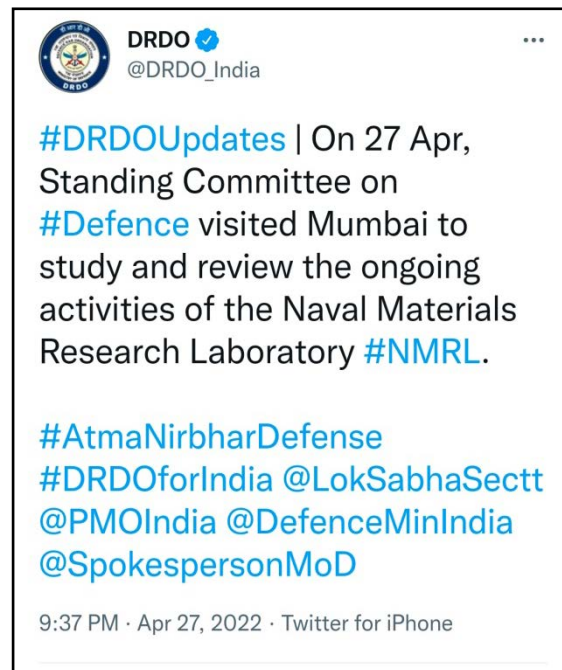
The designers from HAL and scientists from Aeronautical Development Agency (ADA) in coordination with the Regional Centre for Military Airworthiness (RCMA), CEMILAC are the ones who have made the schedule and plan for the MAFT Test. And these tests and inspections will be carried out by ARDC and it will be under the supervision of DGAQA and there will be participants from ARDC and ADA. While R Madhavan, CMD, HAL and Dr Girish Dheodhare, PGD (CA) & DG-ADA, expressed their satisfaction over the timely MAFT testing, Air Vice Marshal KV R Raju, Director IAF-PMT has urged the team to keep up the momentum of the tests as this would ensure that the continuous flying requirements of the IAF are met with.

About LCA in IAF

According to reports in May 2020, the state-owned HAL had produced its first LCA-MK1 FOC variant aircraft; it was then put to test. The FOC version is seen as an operational upgrade to the Initial Operational Clearance (IOC) version. So far the IAF has already delivered 16 IOC variant aircraft and they are part of the No 45 squadron (Flying Daggers) at the Sullur Air Force Station. Also, No 18 squadron (Flying Bullets) has been operationalised by the IAF and it has FOC variants at the same air base. As has been reported earlier, once IAF gets the delivery of all the 24 FOC variants (16 FOC-single seater and 8 FOC twin seater), according to officials, the 45 Flying Daggers will then be upgraded to the same variant. The CCS has already given a green signal to the IAF's 83 LCA-MK-1A order worth Rs 48, 000 crore which was awarded to HAL and to ensure that the production is expedited; a second plant was inaugurated in Bengaluru. This order includes 73 Tejas Mk-1A variants and 10 LCA Tejas Mk-1 trainer aircraft. The delivery of these is expected to start by March 2024.

<https://www.financialexpress.com/defence/maft-tests-of-lca-mk1-airframe-starts/2505669/>

DRDO On Twitter





Defence News

Defence Strategic: National/International



Thu, 28 Apr 2022

Commander of US Indo-Pacific command admiral John Aquilino meets defence minister Rajnath Singh

Commander of US Indo-Pacific Command, Admiral John Aquilino, called on Defence Minister Rajnath Singh in New Delhi on Wednesday. This comes in the wake of the India-US 2+2 Ministerial Dialogue on April 11 where the US had supported India as a defence industry leader in the Indo-Pacific and a net provider of security in the region, said US Defence Secretary Lloyd Austin.

Addressing a press conference after the dialogue, he said that the US has identified a new opportunity (India) to extend the operational reach of our military to coordinate more closely

together across the expanse of the Indo-Pacific. "We all understand the challenges that we are facing. The People's Republic of China is seeking to refashion the region in the international system more broadly. In ways that serve its interest," he said. "So we have identified a new opportunity to extend the operational reach of our military to coordinate more closely together across the expanse of the Indo-Pacific. We walked on the Indian Navy's decision to join the combined maritime forces in Moraine Bahrain and we have also committed to more high-end exercises together," Austin added during the conference.

<http://www.indiandefensenews.in/2022/04/commander-of-us-indo-pacific-command.html?m=1>



Wed, 27 Apr 2022

Army's northern command to hold symposium to identify cutting edge technology it needs

The Northern Command of the Indian Army is to hold a two-day symposium in J&K's Udhampur to identify the cutting edge technologies it needs to solve its operational challenges, officials said on Wednesday. The "North Tech Symposium 2022" of the Command will start on May 6, they said. The Command is most actively engaged in counter-insurgency and counter-terrorism operations in Jammu and Kashmir besides strategic areas of eastern Ladakh, they said. "Northern tech symposium 2022 is being organised on May 6 and 7 at Udhampur by the Army at Northern Command in its bid to promote make in India' initiative in defence technology," Northern Command defence spokesperson Colonel Abhinav Navneet said.

He said the Symposium focuses on the government's vision of self-reliance in defence technologies. "North Tech Symposium 2022 will showcase cutting edge technologies providing solutions to the operational challenges faced by the Northern Command," Colonel Navneet said. Army officers said they are looking to engage with the private sector, DPSUs, R&D Organizations viz, DRDO and Academia which can be our valuable partners in the development, fabrication and induction of technologically advanced systems to meet the operational needs of the Northern Command. "Systems found suitable would be taken up for procurement through the Army Commander's Special Financial Powers (ACSFP)," one of the officers said.

They said there is a web interface available to acquaint, orient and assist interested parties to register for North Tech Symposium 2022 scheduled on May 6 and 7. The North Tech symposium is an annual event being conducted at Udhampur which provides an efficacious opportunity for knowledge diffusion amongst various stakeholders with an intended end state of creating awareness of contemporary technologies and hardware solutions available with the spectrum of manufacturers under Raksha Atmanirbharta, a Northern Command statement said. The Symposium will pave the way to identify suitable technologies and products for subsequent trials and induction in Northern Command and also to facilitate interface with the field Army to orient their products towards specific operational requirements, they said.

"We encourage engagement and display of the products in this event to also enable all ranks to enhance their technical knowledge and thresholds for the conduct of efficient and smooth operations," the officer said. Spelling out the symposium's objectives, they said it is to enhance the technological knowledge base of the participants through joint Army-Industry participation

and to acquaint them with prevalent state of the art technologies and Commercial Off-The-Shelf (COTS) solutions' available in defence products for operational exploitation in various domains in Northern Command. "It is to create an effective eco-system for promoting an environment for knowledge diffusion on contemporary defence technologies and products available globally as well as manufactured indigenously," the officer said. The keynote address on 'emerging technologies for enhancing operational efficiency at northern borders' will be delivered by Lt Gen S S Hasabnis and the opening address by Northern Command chief Lt Gen Upendra Dwivedi.

<https://www.republicworld.com/india-news/general-news/armys-northern-command-to-hold-symposium-to-identify-cutting-edge-technology-it-needs-articleshow.html>

Science & Technology News



Press Information Bureau
Government of India

Ministry of Science & Technology

Wed, 27 Apr 2022 3:44 PM

New premium quality wheat variety gives soft and sweet chapatis

Researchers have developed a wheat variety, with excellent baking quality having soft and sweet *chapatis*. The wheat variety called 'PBW1Chapati' has been released at state level in Punjab for cultivation under timely sown irrigated conditions. *Chapati*, a flat baked product prepared from wheat forms a cheap, primary source of protein and calories and is the staple diet in Northern Western India. The desired quality characteristics for *chapati* are greater pliability, puffability, soft texture and light creamish brown colour, slight chewiness with baked wheat aroma. In spite of the part of daily diet, the modern wheat cultivars do not possess *chapati* quality traits. Tall traditional wheat variety C 306 has been the golden standard for *chapati* quality. Later, PBW 175 variety was developed by PAU and had good *chapati* quality. However, both these have become susceptible to stripe and brown rusts. The challenge now is to combine high yield potential and disease resistance and retains the actual *chapati* quality.

Taking up the challenge, the wheat breeding team from Punjab Agricultural University have developed a new variety using marker assisted selection for a linked stripe rust and leaf rust gene Lr57/Yr40 in the PBW175 background. They have retained the *chapati* making parameters by testing the segregating materials using various biochemical tests during development of the variety. The development of end product specific and bio fortified wheat germplasm was earlier on the breeding periphery and it got a great push from Department of Science and Technology PURSE grant under the theme SWASTH BHARAT.

Organoleptic evaluation of fresh *chapatis* prepared from PBW1 *chapati* and checks

Variety	Appearance	Colour	Flavor	Taste	Texture	Overall Acceptability
PBW1 <i>chapati</i>	7.77	7.82	7.77	7.77	8.23	7.89
C 306	7.77	7.92	7.69	7.69	7.69	7.75
PBW 175	7.54	7.69	7.62	7.54	7.69	7.62
HD 3086	7.15	7.38	7.29	7.12	7.23	7.12

Organoleptic evaluation of *chapatis* (after 6 hours of preparation) prepared from PBW1 *chapati* and checks

Variety	Appearance	Colour	Flavor	Taste	Texture	Overall Acceptability
PBW1 <i>chapati</i>	7.75	7.75	7.57	7.74	7.97	7.71
C 306	7.75	7.88	7.52	7.57	7.62	7.62
PBW 175	7.57	7.65	7.51	7.54	7.62	7.60
HD 3086	6.32	7.25	7.17	7.05	6.57	6.74

It paved the way towards consolidating the various gene pools for different traits to develop a viable commercial product with a focus on quality breeding. Thus, it enabled a shift from productivity-oriented technologies to those focused on nutritional enhancement along with yield. Wheat lines emerging out of convergent crosses and possessing novel combination of high zinc, low phytates, high carotenoids, low polyphenols and high grain protein content have entered varietal pipeline.

Supported by the Promotion of University Research and Scientific Excellence(PURSE) grant, the thermocycler machine was used to monitor the presence of a linked stripe rust and leaf rust resistant gene --- ‘Lr57/Yr40’ in the segregating generations and the final selected progenies. Equipment like rheometer (determine the flour viscosity) and dough LAB (determines water absorption of flour, dough development time and other dough mixing parameters) purchased under the PURSE funding helped carry out post-harvest quality analysis of the selected progenies. Until the release of this new variety, C306, released in 1965 had become a brand in itself and the farmers depended on this variety for quality in spite of it being susceptible to foliar rusts and lodging. No other wheat variety before ‘PBW1Chapati’ has matched that quality standard of C306 and since last few years, Punjab consumer base had started shifting to MP wheat, advertised as premium flour and available at exorbitant prices.

The variety ‘PBW1Chapati’ aims to fill this void at commercial level owing to good *chapati* quality, sweet in taste and soft in texture. The colour of the *chapati* is comparably white and it remains soft even after hours of baking.

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