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समाचार पत्रों से चयित अंश
Newspapers Clippings

डीआरडीओ समुदाय को डीआरडीओ प्रौद्योगिकियों, रक्षा प्रौद्योगिकियों, रक्षा नीतियों, अंतर्राष्ट्रीय संबंधों और विज्ञान एवं प्रौद्योगिकी की नूतन जानकारी से अवगत कराने हेतु दैनिक सेवा

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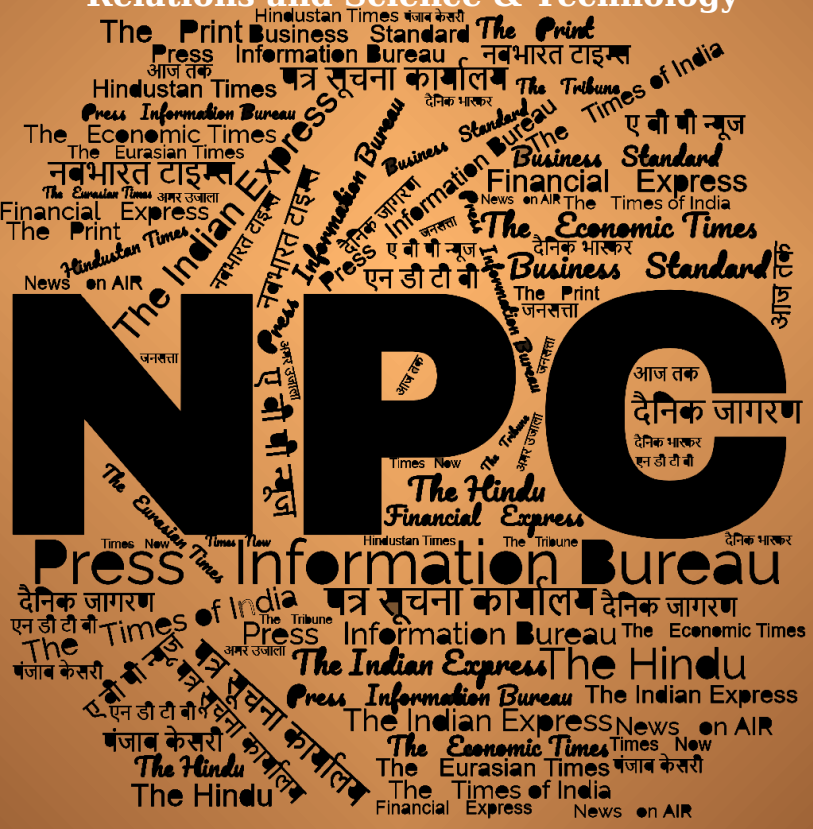

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पत्रिका

Sun, 14 May 2023

डायरेक्टर जनरल शैलेंद्र वी गाड़े बोले- डीआरडीओ बना रहा रोबोट सोल्जर, 5 साल में इस्तेमाल

रायपुर के डीआरडीओ में टेक्नोलॉजी का यूज लगातार बढ़ता जा रहा है। इसके चलते कई क्रिटिकल प्रोजेक्ट और गन का इस्तेमाल होने लगा है। तेजस को हमने ही डेवलप किया था। जमीन से लेकर आसमान के लिए कई प्रोजेक्ट डेवलप हो रहे हैं। अभी हम रोबोट सोल्जर पर काम कर रहे हैं। इसमें आर्टिफिशियल इंटेलीजेंसी (एआई)का यूज किया जा रहा है। चार और दो पांव वाले रोबोट बनाए जा रहे हैं। पहले तो इसे सैनिकों का सहायक बनाया जाएगा, इसके बाद वे खुद सोल्जर की तरह लड़ेगे। इसमें चार से पांच साल का वक्त लगेगा। यह बताया सीनियर साइंटिस्ट और डीआरडीओ के डायरेक्टर जनरल (एसीई) शैलेंद्र वी. गाड़े ने। उन्होंने एनआईटी रायपुर (तब जीईसी) से 1985 में मैकेनिकल इंजीनियरिंग की पढ़ाई की है।

सेना इस्तेमाल करेगी एडवांस टोड आर्टिलरी गन सिस्टम

गाड़े ने बताया, 2010 से एडवांस टोड आर्टिलरी गन सिस्टम पर काम हो रहा था। पिछले साल ही इसके ट्रायल खत्म हुए हैं। सेना ने 307 गन का ऑर्डर दिया है। कुछ जरूरी प्रक्रिया के बाद सप्लाई की जाएगी। इसकी खासियत है कि गन के वायरल का चेंबर 25 लीटर का है। इसमें सात वाय मॉडयूल आते हैं, अब तक दुनिया के किसी भी गन में छह मॉड्यूल ही लोड हुए हैं।

डिजाइन ऐसा कि प्रेशर ज्यादा नहीं बढ़ता। इसलिए एग्रोसिव प्रोजेक्टाइल की कैपेसिटी प्रेशर को हैंडल करने की है। इस प्रोजेक्टाइल से हम अभी 48 किमी तक फायर कर रहे हैं। इससे पहले बोफोर्स की क्षमता 32 किमी थी। बाकी के 52 कैलिबर गन्स 42 किमी तक फायर करती थीं। हमने इसमें ऑल इलेक्ट्रिक ड्राइव यूज किया है जो कि दुनिया में किसी भी गन में इस्तेमाल नहीं हुआ है। हमने हैड्रोलिक्स का उपयोग किया है। इसके प्रयोग से मेंटेनेंस इशु आने लगते हैं। हमने इसे अवाइड करने के लिए नो मेंटेन सिस्टम तकनीक अपनाई। सेना में भी ट्रायल हो चुका है।

लागत तभी कम जब प्रोडक्ट की संख्या ज्यादा हो

प्रोडक्ट की लागत कम करने के सवाल पर बोले- कास्ट कटौती के लिए प्रोडक्शन की संख्या बढ़ानी होगी। अगर कोई प्रोडक्ट 1000 बनाने हैं तो हम इंडस्ट्री हायर कर सकते हैं लेकिन उसी चीज को 100 बनाना हो तो इंडस्ट्री नहीं आएगी। इसलिए इंडस्ट्री के इन्वॉल्वमेंट पर ध्यान नहीं गया है।

https://www.patrika.com/raipur-news/director-general-shailendra-v-gade-said-drdo-making-robot-soldier-5-8238408/

अमर उजाला

Sat, 13 May 2023

गहरे सागर में की गई बातचीत भी होगी सुरक्षित, लेजर तकनीक आधारित सिस्टम तैयार कर रहा DRDO

समुद्र के गहरे पानी में लेजर की मदद से बातचीत सुरक्षित बनेगी। रक्षा अनुसंधान और विकास संगठन (डीआरडीओ) लेजर तकनीक आधारित इसका सिस्टम तैयार कर रहा है। नीली और हरी रोशनी के सहारे लेजर से भेजे जाने वाले संदेश को कोई डी-कोड नहीं कर सकेगा। प्रगति मैदान के विज्ञान एक्सपो में इसका प्रदर्शन किया गया है।

डीआरडीओ वैज्ञानिकों का कहना है कि मौजूदा समय में इस्तेमाल होने वाली तकनीक से यह ज्यादा सुरिक्षत है। विशेषज्ञों के मुताबिक, पनडुब्बियों में अभी तक ध्वनिक तरंगों का इस्तेमाल होता है। स्रोत से इनका चारों दिशाओं में प्रसार होता है। इससे आसानी से कोई भी पकड़ लेता है और उसे डी-कोड भी कर सकता है।

इस समस्या को देखते हुए डीआरडीओ का ठोस अवस्था भौतिकी प्रयोगशाला (एसएसपीएल) अंडर वाटर ऑप्टिकल वायरलेस कम्युनिकेशन को तैयार कर रहा है। इस सिस्टम की क्षमता करीब 150 मीटर होगी। इसकी मदद से पहले ध्वनि ऊर्जा को नीली और हरी रंग की लेजर लाइट में बदला जाता है। इसके बाद इसे पानी से गुजारा जाता है। दूसरे छोर पर रखा यंत्र लेजर लाइट को ध्वनि ऊर्जा में बदल देता है। यह भेजने वाले से लेकर प्राप्त वाले तक सीधी रेखा में जाती है।

डिवाइस की मदद से सात समंदर पार से भी कर सकेंगे सिंचाई

खेतों में सिंचाई करना चाहते हैं और और खेतों से दूर हैं तो चिंता करने की जरूरत नहीं। एक डिवाइस की मदद से आप दुनिया के किसी भी छोर से बैठकर अपने खेत में सिंचाई कर सकेंगे। पंजाब के फिरोजपुर स्थित स्कूल से आए छात्र मानवजोत सिंह ने एक डिवाइस को तैयार किया है जो खेत में बोए गए बीज, नमी और उसकी गुणवत्ता के आधार पर तय करके सिंचाई करेगा। यह यंत्र मोबाइल एप से नियंत्रित होगा जिसमें पंजाब कृषि विश्वविद्यालय की सूचना के आधार पर जानकारी अपडेट हैं। यह सभी मानकों को तय करके मोबाइल एप से संदेश मिलने पर सिंचाई करेगा। खेत में लगा डिवाइस भी वाईफाई से जुड़ा होगा। इस डिवाइस में लगा कृत्रिम बुद्धिमता वाला यंत्र सभी जानकारी को एप तक पहुंचाएगा।

लेजर की मदद से संचार की गति में आएगी तेजी

विशेषज्ञों का कहना है कि लेजर की मदद से भेजी जाने वाली ध्वनि तरंग से बातचीत की गति तेज होगी। इसका इस्तेमाल पनडुब्बी, पानी के नीचे चलने वाले वाहन, समुद्र की सतह पर लगे सेंसर में कम्युनिकेशन करने व अन्य साधन में संचार के लिए इस्तेमाल किया जा सकेगा। भविष्य में इसकी रेंज को भी बढ़ाकर 200 मीटर तक किया जा सकेगा। अन्य सहायक यंत्र की मदद से गति और अधिक हो सकेगी। इस यंत्र का निर्माण एसएसपीएल ही कर रहा है, जो पूरी तरह से स्वदेशी संयंत्र होगा।

पैदल चलने पर सात वॉल्ट तक बनेगी बिजली

पैदल चलने पर अब आप बिजली बना सकेंगे। मदुरई स्थित स्कूल के छात्र संजय और भारत ने फुट स्टेप पावर जनरेटर विथ वायरलैस चार्जर को प्रस्तुत किया है। इस यंत्र में बैटरी के आकार के यंत्र लगाए गए हैं। इस पर चलने पर दबाव पड़ता है और मैग्नेटिक एनर्जी बनती है। इस एनर्जी को सहायक यंत्रों की मदद से ऊर्जा में बदला जाता है। इस ऊर्जा की मदद से बैटरी को चार्ज किया जा सकता है। छात्रों की माने तो इस यंत्र को जूते में भी लगाया जा सकता है, जिसकी मदद से चलने पर सात वॉल्ट तक की ऊर्जा बनाई जा सकती है।

https://www.amarujala.com/delhi-ncr/conversation-done-in-deep-sea-will-also-be-safe-2023-05-13?pageId=1

THE HINDU

Sat, 13 May 2023

Parachutes for Re-entry Capsule of Mission Gaganyaan Shipped from Agra

Indigenously developed parachutes for the safe return of the capsule that will carry astronauts under the proposed Gaganyaan programme are set to undergo fitment tests at an Indian Space Research Organisation (ISRO) facility in Bengaluru.

The Aerial Delivery Research and Development Establishment (ADRDE), the Agra-based laboratory under the Defence Research and Development Organisation (DRDO), has developed the parachutes for India's manned space flight programme, Gaganyaan, which envisages putting a crew of three astronauts in low-earth orbit.

On Saturday, the flight unit of the parachutes was flagged off from ADRDE to the ISRO Satellite Integration and Testing Establishment in Bengaluru.

"The first test demonstration is likely to take place in July this year, with the first unmanned mission to be undertaken only after the success of two such demonstrations," the ADRDE said in a statement. The Test Vehicle Demonstration (TVD-1) flight will be a significant milestone toward realising the nation's ambitious Gaganyaan programme, it stated.

The parachute configuration consists of 10 parachutes. During flight the sequence starts with deployment of two parachutes of "apex cover separation parachute", which is protection cover for the crew module parachute compartment, followed by two more of "drogue parachute deployment" to stabilise and bring down the velocity. Upon the drogue parachute release, three parachutes of the "pilot parachute" system will be used to extract three parachutes of the "main parachute" individually, to reduce the speed of the crew module to safe levels during its landing, the statement explained. Stating that each parachute's performance must be evaluated by complex testing methods, the ADRDE said that individual parachutes have undergone sub-system level testing.

In December 2022, Minister of State in Space and Atomic Energy Jitendra Singh informed Parliament that India's maiden human space flight 'H1' mission is targeted to be launched in the fourth quarter of 2024. In a written reply in the Lok Sabha, the Minister said that in view of the paramount importance of crew safety, two test vehicle missions are planned before the 'G1' mission to demonstrate the performance of crew escape system and parachute-based deceleration system for different flight conditions. "The uncrewed 'G1' mission is targeted to be launched in the last quarter of 2023 followed by the second uncrewed 'G2' mission in the second quarter of 2024, before the final human space flight 'H1' mission in the fourth quarter of 2024," he stated.

He added that the first uncrewed flight 'G1' mission is aimed at validating the performance of human-rated launch vehicle, orbital module propulsion system, mission management, communication system and recovery operations. The mission will carry a humanoid as payload.

The astronaut-designates for the human space flight mission are currently undergoing their mission-specific training at Bengaluru with the second semester of crew training currently underway. The first semester of astronaut training included modules on theoretical basics, space medicine, launch vehicles, spacecraft system and ground support infrastructure. Regular physical fitness sessions, aeromedical training and flying practice are also part of crew training. Corresponding evaluation and assessment activities have also been completed.

https://www.thehindu.com/sci-tech/science/parachutes-for-re-entry-capsule-of-mission-gaganyaan-shipped-from-agra/article66847079.ece

THE TIMES OF INDIA

Sat, 13 May 2023

Cryptography Centre to Come up on DIAT Campus

The general body of the Defence Institute of Advanced Technology (DIAT), a deemed university, has given its in-principle approval for setting up a Centre of Excellence (CoE) in cryptography on its Girinagar campus near the city.

Cryptography refers to methods used for sending coded communication or information as also to decrypt or decipher coded messages sent by adversaries. The institute, which is set to hold its 12th convocation ceremony on May 15, will also introduce MTech courses in green technology and energy renewable and MSc programmes in applied chemistry, data science, information technology, sensor technology and photonics.

Defence minister Rajnath Singh, who is also the chairman and chancellor of DIAT, will be the chief guest at the convocation ceremony. Samir Kamat, chairman of defence research and development organisation (DRDO), which is the parent body of DIAT, and G Satheesh Reddy, the scientific advisor to the defence minister, will also be present at the occasion.

DIAT vice-chancellor CP Ramnarayanan on Friday said, “We (DIAT) will be the nodal agency for overseeing setting up of the CoE and move a proposal for the same to the defence ministry soon. Intelligence agencies use cryptography to decipher coded messages of adversaries for their operational purposes. Often, decoding complex encrypted messages poses a challenge and the need to have a dedicated facility with experts providing solutions, was felt in this context.”

Experts from institutes of national repute, such as the Indian Institutes of Technology, Indian Institute of Science (IISc), Bengaluru and the Indian Statistical Institute (ISI), Kolkata, among others, will work together at the proposed centre. Armed forces officers pursuing their masters and PhD studies at DIAT will also be involved, he said.

On the new courses, DIAT’s dean (academics) K Balasubramanian said, “We have secured approval from the All India Council of Technical Education for the MTech and MSc courses. The student intake for each of these courses will be 20. The admissions will be through the Graduate Aptitude Test in Engineering.”

Balasubramanian said more than 90% of the DIAT students got placed in leading private industries in the last five years.

https://timesofindia.indiatimes.com/city/pune/cryptography-centre-to-come-up-on-diat-campus/articleshow/100199264.cms

abp न्यूज़

Sat, 13 May 2023

National Technology Day Celebrated with Young Minds in Assam to Commemorate 25 Years of Pokhran Testing

The National Technology Day (NTD), is celebrated on May 11 every year, to commemorate the successful testing of nuclear weapons in Pokhran, in the year 1998. The theme of the NTD this year was ‘School to startups-igniting young minds to innovate.’ The Defence Research Laboratory

(DRL) in collaboration with the Defence Research and Development Organisation (DRDO), Tezpur however celebrated the 25th year of NTD with great enthusiasm and fervor on May 12.

During the inaugural session, the senior Army officers encouraged the students to be motivated and inspired in the field of science and technology for newer innovations.

This was followed by an oration by Tezpur Dr. Ankit, a scientist of the DRL, who described the bio-fortification of pearl millet through alternate sulfur feeding strategies.

To commemorate the occasion, science model and quiz competitions were organised among the school students of the Sonitpur district of Assam.

The students were briefed about the activities of the DRDO and DRL by the scientists of the laboratory.

The chief guest also addressed the august gathering and motivated the students to take a keen interest in science and technology to pursue careers in Research and Development.

In the end, prizes were distributed among the winners of the competitions.

National Technology Day Commemorates Pokhran-II Tests

The Pokhran-II tests were a series of five nuclear bomb test explosions conducted by India at the Indian Army's Pokhran Test Range in May 1998.

It was the second instance of nuclear testing conducted by India; the first test, code-named Smiling Buddha, was conducted in May 1974.

The tests achieved their main objective of giving India the capability to build fission and thermonuclear weapons with yields of up to 200 kilotons.

The Indian government has officially declared 11 May as National Technology Day in India to commemorate the first of the five nuclear tests that were carried out on 11 May 1998.

https://news.abplive.com/northeast/national-technology-day-drdo-drl-celebrate-with-young-minds-in-assam-to-commemorate-25-years-of-pokhran-testing-1601954

DRDO on Twitter

Defence News

Defence Strategic: National/International

Press Information Bureau
Government of India

Ministry of Defence

Sun, 14 May 2023

India-Indonesia Bilateral Exercise Samudra Shakti - 23

INS Kavaratti, indigenously designed & built ASW Corvette, arrived at Batam, Indonesia to participate in the 4th edition of India-Indonesia Bilateral exercise Samudra Shakti-23 from 14-19 May 23. An Indian Navy Dornier Maritime Patrol aircraft and Chetak helicopter is also participating. The Indonesian Navy will be represented by KRI Sultan Iskandar Muda, CN 235 Maritime Patrol Aircraft and AS565 Panther Helicopter.

Exercise Samudra Shakti is aimed at enhancing interoperability, jointness and mutual cooperation between both the navies.

The Harbour phase will comprise Cross deck visits, professional Interactions, Subject Matter Expert Exchanges, and sports fixtures.

During the Sea Phase, weapon firing, Helicopter Operations, Anti-submarine warfare & air defence exercises and boarding operations are planned.

Samudra Shakti -23 will showcase the high level of interoperability between the two navies and their shared commitment towards peace and stability in the region.

https://pib.gov.in/PressReleasePage.aspx?PRID=1924058

Press Information Bureau
Government of India

Ministry of Defence

Sun, 14 May 2023

‘Aatmanirbharta’ in Defence: MoD Approves 4th Positive Indigenisation List of 928 Strategically-Important Line Replacement Units/Sub-systems/Spares & Components

To promote ‘Aatmanirbharta’ in defence & minimise imports by Defence Public Sector Undertakings (DPSUs), Raksha Mantri Shri Rajnath Singh has approved 4th Positive

Indigenisation List (PIL) of 928 strategically-important Line Replacement Units (LRUs)/Sub-systems/Spares & Components, including high-end materials & spares, with import substitution value worth Rs 715 crore. Details of these items are available on SRIJAN Portal (https://srijandefence.gov.in/). These will only be procured from the Indian Industry after the timelines indicated in the list.

This fourth list is in continuation to the previous three PILs involving LRUs/Sub-systems/Assemblies/Sub-assemblies/Spares & Components which were published in December 2021, March 2022 and August 2022 respectively. These lists contain 2,500 items which are already indigenised and 1,238 (351+107+780) items which will be indigenised within the given timelines. Of 1,238, 310 items (1st PIL - 262, 2nd PIL - 11, 3rd PIL - 37) have been indigenised, so far. The DPSUs will undertake indigenisation of these items through different routes under 'Make' category and in-house development through the capabilities of MSMEs and private Indian industry, thereby providing impetus to the growth in economy, enhanced investment in defence and reduction in import dependence of DPSUs. In addition, this will augment the design capabilities of the domestic defence industry by involving academia and research institutions.

The DPSUs will soon initiate procurement action for these notified items. The industry may look for Expression of Interest (EoIs)/Request for Proposal (RFPs) on the Srijan Portal Dashboard (https://srijandefence.gov.in/DashboardForPublic) especially designed for this purpose and may come forward to participate in large number.

https://pib.gov.in/PressReleasePage.aspx?PRID=1923971

THE TIMES OF INDIA

Mon, 15 May 2023

'Make in India' Push: Defence Ministry Bans Import of 928 Items

The defence ministry has approved another list that progressively bans import of 928 sub-systems, components, spares and 'line replacement units' of military equipment and platforms by defence PSUs to promote self-reliance.

The new "positive indigenisation list" for the defence PSUs is in continuation of the first three such lists, which contained a total of 1,238 items, announced in December 2021, March 2022 and August 2022.

"The 928 items in the fourth list, with import substitution value of Rs 715 crore, will be procured from Indian industry after the timelines indicated in the list that range between December 2024 and December 2028. Of the 1,238 earlier items, 310 have been indigenised so far," an official said. Over 450 of the items in the fourth list are different kinds of components of "magazine fire-fighting systems", while 260 are related to gas turbine generators and 147 to shafting. The list also includes several items connected to the HTT-40 trainer aircraft, including main and nose wheel tyres and multi-function displays.

Defence PSUs will undertake indigenisation of 928 listed items through different routes under 'Make' category and in-house development.

https://timesofindia.indiatimes.com/business/india-business/make-in-india-push-defence-ministry-bans-import-of-928-items/articleshow/100235904.cms

जागरण

Sun, 14 May 2023

आत्मनिर्भर भारत की पहचान INS Mormugao से ब्रह्मोस मिसाइल का सफल परीक्षण, दुश्मनों के ऐसे छुड़ाएगा छक्के

नवीनतम गाइडेड-मिसाइल डिस्ट्रॉयर INS मोरमुगाओ ने अपनी पहली ब्रह्मोस सुपरसोनिक क्रूज मिसाइल फायरिंग के दौरान 'बुल्स आई' पर सफलतापूर्वक निशाना साधा है। बता दें कि INS मोरमुगाओ का डिजाइन भारतीय नौसेना के स्वदेशी संगठन ने तैयार किया है। इसका निर्माण मझगांव डॉक शिपबिल्डर्स लिमिटेड मुंबई ने किया है।

आत्मनिर्भर भारत की पहचान है INS मोरमुगाओ

INS मोरमुगाओ भारत में निर्मित सबसे शक्तिशाली युद्धपोत में से एक है। इसे केंद्रीय रक्षा मंत्री राजनाथ सिंह की मौजूदगी में 18 दिसंबर को मुंबई के नौसेना डॉकयार्ड में नौसेना में कमीशन किया गया था। इस दौरान रक्षा मंत्री ने कहा था कि MDSL द्वारा तैयार यह युद्धपोत स्वदेशी रक्षा उत्पादन क्षमता का बड़ा उदाहरण प्रस्तुत करता है।

INS मोरमुगाओ भारतीय नौसेना के लिए है काफी खास

खास बात ये है कि INS मोरमुगाओ परमाणु, जैविक और रासायनिक युद्ध लड़ने में सक्षम है। इसे शक्तिशाली चार गैस टर्बाइन से गति मिलती है, जो सीओजीएजी पैमाने के हैं। इस शानदार पोत की की लंबाई 163 मीटर, चौड़ाई 17 मीटर व इसका वजन 7400 टन है। इसके साथ ही इसे भारत द्वारा निर्मित सबसे घातक युद्धपोतों में गिना जा सकता है। पलक झपकते ही ये 30 समुद्री मील तक की गति पकड़ सकता है।

गोवा के ऐतिहासिक बंदरगाह पर रखा गया नाम

इस युद्धपोत को गोवा के ऐतिहासिक बंदरगाह मोरमुगाओ का नाम दिया गया है। 2021 में 19 दिसंबर को इसे समुद्र में उतारा गया था। ये वहीं दिन था, जब गोवा को पुर्तगाली शासन से आजादी मिली थी और इसे 60 साल पूरे हुए थे। रक्षा मंत्रालय के मुताबिक, INS Mormugao ब्रह्मोस और बराक-8 जैसी मिसाइलों से लैस है। इससे हिंद सागर में भारतीय नौसेना की पहुंच बढ़ेगी, साथ ही समुद्री सीमाओं की सुरक्षा और चाकचौबंद होगी।

https://www.jagran.com/news/national-ins-mormugao-completes-its-first-target-in-supersonic-cruise-missile-firing-23411957.html

TIMESNOW

Sun, 14 May 2023

Major Boost to Aatmanirbhar Bharat! INS Mormugao Successfully Conducts Maiden Test Firing of Brahmos Supersonic Cruise Missile

In a major boost to 'Aatmanirbhar Bharat' initiative, INS Mormugao, the latest guided-missile Destroyer, successfully conducted a test firing of the Brahmos Supersonic cruise missile on Sunday. The destroyer hit 'bull's eye' during her maiden test fire.

Notably, IND Mormugao and the Brahmos Supersonic cruise missile, both are indigenously developed and are strengthening the Indian Navy's firepower at sea.

Brahmos Supersonic cruise missile

Notably, INS Murmoagoa is the second of the Project 15B stealth-guided missile destroyers. It was built by Mazagon Dock Shipbuilders Limited (MDSL). INS Mormugao was commissioned into the Indian Navy on December 18, 2022. .he destroyer has been named after a key port in Goa.

Meanwhile, BrahMos is a two-stage missile with a solid propellant booster engine as its first stage. It brings it to supersonic speed and the gets separated. It is a joint venture between the Indian Defence Research and Development Organisation (DRDO) and the Russian Federation's NPO Mashinostroyeniya. Together these companies have formed BrahMos Aerospace.

Meanwhile, in March this year, the Defence Ministry also signed a contract for a normal refit submarine Sindhukirti at Hindustan Shipyard Limited (HSL) in Visakhapatnam. The cost of the entire project will be Rs 934 crore. Notably, Sindhukirti is the third Kilo Class Diesel Electric Submarine. "After completion of refit, Sindhukirti will combat worthy and will join the active submarine fleet of the Indian Navy," the Defence Ministry had said.

https://www.timesnownews.com/india/major-boost-to-aatmanirbhar-bharat-ins-mormugao-successfully-conducts-maiden-test-firing-of-brahmos-supersonic-cruise-missile-article-100225244

THE TIMES OF INDIA

Sat, 13 May 2023

State Univ Develops IED Detectors

Chhattisgarh’s Ravishankar Shukla University has developed sensor system by isolating bacteria that react against DNT — used to produce explosives. This technique will be helpful to detect landmines buried under the ground.

These sensors can be dropped in suspected areas using drones and their readings can be observed from a distance using binoculars. As the device detects the presence of explosives underground and changes colour after 30 minutes of coming in contact or detecting DiNitroToluene (DNT), the presence of explosives in the area could be determined, the professor Dr K.K Sahu.

Sahu told TOI the project was sanctioned under the Defence Research and Development Organisation (DRDO) in the year 2019. The device could prove to be a boon for the security forces in Maoist affected Bastar, where the Naxals often use landmines and IEDs to attack the security forces.

The main objective of the project was to create a device that could detect the landmines are buried without using any machine. For this, a literature survey was done. In the survey, it was found that in countries like Israel, detections using bacteria detectors and genome sequencing was established.

Bacteria was preferred due to their quick reaction and signal-giving nature.

Soils from areas in Bastar, where explosions have taken place earlier, were collected following which it was mixed and processed. Bacteria were isolated and more than 20 micro-organisms that reacted to DNT were extracted. Among these, five major organisms were further isolated that took lesser time to react, he added.

These bacteria were then mixed with Sodium alginate and shaped into a dough. A dye was also added to the mixture to observe the reaction in the form of a colour change. The main motive was to make the reaction visible with the naked eyes. The more the bacteria came in contact with DNT, the more they changed their colour, said Sahu. The DNT buried underground continuously vaporize

and release certain gases that are detected by the bacteria. This results in the consumption of energy and triggers a reaction that causes a colour change.

https://timesofindia.indiatimes.com/city/raipur/state-univ-develops-ied-detectors/articleshow/100198935.cms

THE TIMES OF INDIA

Fri, 12 May 2023

INS Hansa: First Defence Airfield with RNP Approach-Based on GAGAN Indian Satellite System

In a significant boost for civil and military flying operations, naval airbase INS Hansa has become the very first Joint-User International Aerodrome in the South-Asia Pacific region to be augmented with the Required Navigation Performance (RNP) approach. This will benefit military aircraft as well as passenger flights operating out of Goa International Airport, Dabolim.

The RNP approach will reduce dependency for navigation on ground-based equipment such as Very-High Frequency Omnidirectional Radio (VOR) and Instrument Landing System (ILS).

This RNP approach will provide near Category-I ILS accuracies, thereby aiding unhindered flying operations even when the aforementioned equipment are unserviceable/ under maintenance.

The capability was achieved through dedicated and concerted efforts of Indian Navy and Airports Authority of India (AAI). A team of AAl officials visited the Air Station between April 7-8, 2022, towards formulation of Letters of Agreement (LOA) between INS Hansa and Mopa International Airport.

During the discussions, AAl offered to revise all the Instrument Approach Procedures (IAPs) of INS Hansa and also design Required Navigation Performance (RNP) approaches for both the runways.

The station deputed one Instrument Procedure Design Course (IPDC) qualified officer to AAl and all the lAPs were revised with the help of Aeronautical Charts prepared by Survey Department of the AAI. The AAl also designed the Indian satellite (GAGAN) based RNP approach for runway 26 at INS Hansa (Dabolim Airport) for which Satisfactory flight trials were conducted using the station's air assets, the Indian Navy said in a statement.

https://timesofindia.indiatimes.com/india/ins-hansa-first-defence-airfield-with-rnp-approach-based-on-gagan-indian-satellite-system/articleshow/100191623.cms

NewsOnAIR

Mon, 15 May 2023

Chief of Defence Staff General Anil Chauhan to Participate in Indo-Pacific Security Dialogue in US Today

Chief of the Defence Staff General Anil Chauhan will participate in the Indo-Pacific Security Dialogue in the United States today. Defence Ministry said, the three day event is beginning today in California.

Senior military commanders from Quad member countries will meet in Sunnylands in California to attend the high-profile meeting on Indo-Pacific Security.

General Chauhan is scheduled to interact with top military officers from US, Japan and Australia.

This is the first visit of Chief of the Defence Staff General Anil Chauhan outside the country since he took over as the CDS in October last year.

https://newsonair.com/2023/05/15/chief-of-defence-staff-general-anil-chauhan-to-participate-in-indo-pacific-security-dialogue-in-us-today/

The EurAsian Times

Sun, 14 May 2023

No Funding Crunch, India's LCA Tejas MK2 'In a Limbo' over ToT Approval; PM Modi's US Visit Could Seal the Deal

By Neeraj Rajput

Next month's visit of Prime Narendra Modi to the White House is likely to churn the momentum of the deal, EurAsian Times has learned.

India's medium-weight fighter (MWF), LCA Mk2, is an advanced version of Light Combat Aircraft (LCA) Mk1A, which is being used by the Indian Air Force (IAF).

The LCA Tejas series has been designed and developed by India's government subsidiary Aeronautical Development Agency (ADA), in active participation with Hindustan Aeronautics Ltd (HAL). LCA jets are manufactured in the Bengaluru facility of HAL.

Last year in September (2022), Cabinet Committee on Security (CCS) approved a sum of Rs 10,000 crore ($1.2B) for the development of the LCA Tejas MK2 project, which included prototype development and flight testing.

"This sum for the LCA MK2 project was sanctioned from the Defence Budget of the Ministry of Defence (MoD)", said a top functionary involved in the project. "So there has been no crunch of funds, but the issue which has stalled the project is 100 percent Transfer of Technology (TOT) of the GE 414 engines from the US", a top source linked to Tejas MK2 program told EurAsian Times.

LCA Mk2 is pitched to be 4.5 generation aircraft with a weight heavier than the LCA Mk1A. With a weight of 7.8 tons, LCA Mk2 is slated to carry a payload (weapons) of 6.5 tonnes.

While LCA Mk1A has 08 weapons pods, Mk2 aircraft has 11 weapons pods. HAL plans to weaponize Mk2 with indigenous missiles like Astra and Rudram beside French Meteor, Mica, and Scalp. MK2, when developed, is likely to replace IAF's aging squadrons of Mirage 2000 and Jaguars fighter jets.

LCA MK2 jets are to be powered by GE-F414 INS6 engines of the US giant GE Aviation. The company is 'willing' to manufacture GE-414 engines in India under Prime Minister Narendra Modi's flagship program of 'Make In India.'

The proposal is learned to have been pending before the US Congress now. India needs at least 99 such F414 engines for Mk2 aircraft. In 2021, HAL signed a deal worth Rs 5375 crores ($650M) for procuring 99 F404 engines from GE Aviation for LCA Tejas Mk1A aircraft.

Last month US Congressman Ro Khanna, on his visit to India, told the media that the deal for the ToT is likely to be done before PM Modi's visit to the US, which is scheduled to be in the month of June.

As per the White House, PM Modi will attend a dinner hosted by President Joe Biden on June 22 at his official residence during the US visit.

In January this year, National Security Advisor (NSA) Ajit Doval visited the US to attend the inaugural meeting of the initiative on Critical and Emerging Technologies (iCTE) with his counterpart Jake Sullivan. iCTE was announced by PM Modi and President Biden in the year 2022.

After the January meeting between Doval and Sullivan, the White House issued a 'fact sheet' on Indo-US cooperation in the field of technology.

It read, "Developing a new bilateral Defense Industrial Cooperation Roadmap to accelerate technological cooperation between both countries for the joint development and production, with an initial focus on exploring projects related to jet engines, munition-related technologies, and other systems."

It further mentioned about GE's request, "Noting the United States has received an application from General Electric to jointly produce jet engines that could power jet aircraft operated and produced indigenously by India. The United States commits to an expeditious review of this application."

"Take the case of India's first indigenous fighter jet project Marut (of the 60s), which failed primarily due to its engine. It was a well-designed and very capable aircraft, but the project dommed as the engine was not indigenous", says Dr. Ravi Gupta, an Ex Scientist of DRDO.

Defence Research and Development Organisation (DRDO) is India's leading defense establishment owned by the government and involved in the R&D of tanks, artillery guns, bombs, and missiles. ADA, which is involved in the design and development of the LCA Tejas series, is owned by DRDO.

"So, if the LCA Mk2 project needs to be successful, its engine should be fully indigenous", Dr. Gupta told EurAsian Times, emphasizing 100 percent ToT of GE-414 engines to India.

ADA and HAL had initially planned to develop the LCA Mk2 by the end of this year, i.e., by 2023, and production from 2025. But with the ToT issue still pending, the project will be delayed like the earlier versions of LCA Tejas and LCA Tejas Mk1A.

While presently, IAF operates 02 squadrons of basic Tejas aircraft, MoD had ordered 83 Mk1A fighters too.

ADA and HAL are working on the design and development of the 5th generation stealth fighter jet, AMCA (Advanced Medium Combat Aircraft). The government aviation agencies need engines for AMCA too.

With the big demand for engines for indigenous fighters, the Modi-led Indian Government wants to manufacture these engines in India under the 'Atma-Nirbhar' (self-reliance) policy of New Delhi.

"There are numerous global aviation companies that manufacture fighter jets, but few have developed aircraft engines because the design and development of an aircraft engine is far more complicated than the design of an aircraft," says Dr. Gupta. "If GE-414 engines are manufactured under ToT, India will be a world competitor for the design of aircraft engines", he adds, boosting the 'Make in India' program.

https://eurasiantimes.com/no-funding-crunch-indias-lca-tejas-mk2-in-a-limbo-over/

ThePrint

Sun, 14 May 2023

Jaishankar Meets Sweden's Defence, Foreign Ministers During his Stockholm Trip

External Affairs Minister S Jaishankar met Sweden's Defence Minister Pal Jonson and Foreign Minister Tobias Billstrom during his three-day visit to Sweden.

Taking to Twitter, Jaishankar said, "Good to meet Defence Minister Pal Jonson of Sweden. Useful exchange of views on regional and global security."

After meeting his Swedish counterpart, Jaishankar said that both countries are committed to taking bilateral cooperation to a higher level. Both nations had exchanged views on the Indo-Pacific, the European strategic situation and de-risking the global economy.

"Wide-ranging discussions with FM @TobiasBillstrom as India and Sweden mark 75 years of diplomatic ties," Jaishankar said in another tweet.

Jaishankar is on a three-day visit to Sweden to participate in the EU Indo-Pacific Ministerial. He is also expected to attend the inaugural session of the India Trilateral Forum involving India, Europe, and the US, with his Swedish counterpart Tobias Billstrom. In addition, Jaishankar will discuss India-EU relations during his visit as Sweden currently holds the Presidency of the Council of the European Union.

At the EU-India Pacific Ministerial Forum, Jaishankar laid stress on the multipolar world.

"The Indo-Pacific is a complex and differentiated landscape that is best understood through more intensive engagement. A generous and strategic approach that caters to economic asymmetries will surely enhance the EU's appeal. The more European Union and Indo-Pacific deal with each other, the stronger will be their respective appreciation of multi-polarity. And remember, a multipolar world, which the EU prefers, is feasible only by a multipolar Asia," said Jaishankar.

He said that the EU has major stakes in Indo-Pacific developments, especially concerning technology, connectivity, trade and finance. Jaishankar dealt with globalisation and established thinking at the forum.

"Globalization is the overwhelming reality of our times. However, far apart, regions and nations cannot be impervious to significant events elsewhere. Nor can we cherry-pick them to our convenience.

The European Union has major stakes in Indo-Pacific developments, especially as they pertain to technology, connectivity, trade and finance. It has to, in respect for, and observance of UNCLOS. Agnosticism on such matters is therefore no longer an option," he said.

https://theprint.in/world/jaishankar-meets-swedens-defence-foreign-ministers-during-his-stockholm-trip/1574075/

Firstpost.

Sat, 13 May 2023

US Plans Massive Upgrade of Guam's Air Defence to Deter Potential Attack by China

A significant upgrade to Guam's missile defences is planned, strengthening US military installations there against potential Chinese and North Korean strikes.

According to USNI News, the Pentagon is starting the process of supplying Guam with a persistent missile defence system that offers 360-degree coverage against Chinese and North Korean missile threats.

The road-mobile AN/TPY-6 four-sided phased array radar for integrated air and missile defence, connected to a disassembled Aegis Ashore on the periphery, is mentioned in the USNI study.

Vice Admiral Jon Hill, director of the US Missile Defence Agency, told the Senate Armed Forces Committee that environmental reviews for more missile defence sites are in progress, according to the report. According to Hill, the buildings will be built to offer many layers of defence against simultaneous cruise, ballistic, manoeuvring, and hypersonic attack.

In a July 2021 article for The Warzone, Joseph Trevithick mentions that it could be feasible to add some of the Aegis Ashore system to the expansive Anderson Air Force Base. Trevithick also makes reference to the possibility of constructing an underground bunker near the southernmost point of Guam, with interceptor missiles being launched from openings in the hillside.

The Terminal High Altitude Air Defence (THAAD) system and neighbouring warships that are outfitted with Aegis will be complemented by the future Aegis Ashore site.

The sheer number of systems, though, could be problematic, according to researchers.

Guam has a perfect air and missile defence problem, writes Chris Gordon in a March 2023 article for Air & Space Forces Magazine. He cautions that integrating fragmented missile defence systems might not be successful against adversaries using a variety of cutting-edge weapons to exploit Guam's defences, such as drones, cruise missiles, ballistic missiles, and hypersonic weapons.

Guam's missile defence is problematic, according to Harry Harris, who points out in a July 2021 piece for Breaking Defence that unlinked systems and fixed sensor-to-shooter combinations threaten failure at first contact with an adversary carrying sophisticated missiles.

Harris adds that in order to resist hypersonic threats, tremendous sensor integration across multiple domains, including cyber and space, is required due to the sheer volume of missiles fired in a saturation attack.

Additionally, he claims that Aegis Ashore has very modest defences against low-flying cruise missiles, though an upgraded model has a cutting-edge command and control system to engage other platforms.

The DF-26, China's first ballistic missile with a 4,000-kilometer range to target Guam, and the Hwasong 14 and 15, both of which have a 4,500-kilometer range when shot at a normal trajectory, are examples of so-called "Guam killer" missiles used by China and North Korea.

China may now be able to place Guam within hypersonic attack range of its navy and air forces, in addition to hitting Guam with ballistic missiles.

The Shandong carrier battlegroup of China, which might have threatened US forces with air and ship-launched hypersonic missile attacks, was said to have come within 600 to 700 km of Guam by The Warzone last month.

The Shandong battlegroup may have been sent out to demonstrate China's ability to flank Taiwan from the south and prevent US forces stationed in the Philippines from receiving resupply and reinforcement from Guam in addition to posing a danger to Guam.

https://www.firstpost.com/world/us-plans-massive-upgrade-of-guams-air-defence-to-deter-potential-attack-by-china-12590182.html

R. REPUBLICWORLD.COM

Sat, 13 May 2023

Russia Tried to Destroy US-Made Patriot Defence System Using Hypersonic Missile: Report

A hypersonic missile was launched last week by Russia in an attempt to destroy a Patriot air defence system made in the United States (US) and sent to Ukraine, two US officials told CNN media outlet.

According to officials, the attack was unsuccessful as the Ukrainian military managed to intercept the hypersonic missile using the Patriot system. This marks the first recorded instance of the Ukrainian military successfully utilising the advanced air defense system, which had only been deployed to the country a few weeks prior.

An official stated that the Ukrainian air defence unit fired multiple Patriot missiles from various angles to intercept the Russian missile, showcasing their rapid proficiency in operating the potent system.

The US officials believed that the Russians were able to target the Patriot system using their hypersonic missile, referred to as Kinzhal or Killjoy, by detecting signals emitted from the Patriot.

Patriot defence system able to detect incoming targets at long-range

The Patriot missile system is equipped with a robust radar system that can identify incoming threats from a significant distance, making it a formidable air defense platform capable of intercepting not only conventional aerial threats but also ballistic missiles.

However, the radar signals emitted by the Patriot to detect distant targets also make it susceptible to detection by the enemy, potentially revealing the location of the system. In contrast to some of the shorter-range mobile air defense systems provided to Ukraine, the Patriot battery is a stationary system, making it easier for the Russians to locate and target over time.

Officials have noted that there are methods to partially conceal these radar signals, but it appears that the Russian military was able to determine the approximate location of the Patriot system stationed outside of Kyiv, reported CNN. The interception occurred on May 4, during the evening, as reported by Mykola Oleshchuk, the commander of the Ukrainian Air Force, over the weekend.

In the past, Kremlin spokesperson Dmitry Peskov has stated that the Patriot system would be considered a legitimate target for Russian forces. Earlier this week, US Pentagon press secretary Brig. Gen. Patrick Ryder confirmed that the Ukrainian military had successfully intercepted the Kinzhal hypersonic missile using the Patriot system, which is capable of reaching extremely high speeds.

Ukraine trained with western allies on Patriot

To bolster its air defense capabilities, Ukraine has received a minimum of two Patriot systems - one from the United States and another from Germany. This upgrade was necessary since their previous air defense systems were not capable of intercepting advanced Russian missiles, like the Kinzhal.

Initially, when the United States declared its intention to deploy the Patriot missile systems to Ukraine, the anticipated delivery timeline was several months, taking into account the intricacy of the system and the need to train numerous Ukrainian troops to operate the battery, which comprises multiple components. However, the Ukrainian military already had a strong understanding of air defense systems, enabling the United States to reduce the usual training program, which typically lasts about a year, to several months, reported CNN.

In mid-April, the final inspection of the Patriot systems was carried out, with US, German, and Dutch trainers working alongside Ukrainian service members to ensure that the systems were ready to be deployed to Ukraine. Following the inspection, the systems were transported to Ukraine soon after.

https://www.republicworld.com/world-news/russia-ukraine-crisis/russia-tried-to-destroy-us-made-patriot-defence-system-using-hypersonic-missile-report-articleshow.html

Science & Technology News

Press Information Bureau
Government of India

Ministry of Science & Technology

Sun, 14 May 2023

"National Technology Week 2023 Concludes in Delhi; Dr Jitendra Singh Graces the Occasion on Valedictory Ceremony"

"TDB/DST confers National Technology Awards upon Industries, Entrepreneurs & Scientists at National Technology Awards ceremony on closing day of NTW 2023"

National Technology Day is celebrated every year on 11th May to commemorate the country's technological advancements. It was on this day in 1998, India had the prideful accomplishments of 'Operation Shakti' and 'Hansa 3 Test flown'. For this year, to mark this momentous occasion of 25th anniversary of these landmark events, Technology Development Board along with 12 Ministries/Departments viz. Atal Innovation Mission (AIM) -NITI Aayog, Department of Science and Technology, Ministry of Earth Sciences, Defence Research and Development Organisation - Ministry of Defence, Council of Scientific and Industrial Research (CSIR), Department of Biotechnology, Department of Atomic Energy, Ministry of Electronics and Information Technology, Department of Telecommunications, Ministry of Education, Indian Space Research Organisation and Department for Promotion of Industry and Internal Trade (DPIIT) organised National Technology Week, 2023 with primary focus on Atal Innovation Mission, programs and showcase innovations from different sectors of the innovation lifecycle with a central theme of 'School to Startup- Igniting Young Minds to Innovate'.

The event was inaugurated by Hon'ble PM, Shri Narendra Modi. Praising the theme of event 'School to Start-ups - igniting young minds to innovate,' the Prime Minister said that India's future will be decided by the youth and children of today. He said that the passion, energy and capabilities of the children and youth today are India's big strengths. Quoting Dr APJ Abdul Kalam, the Prime Minister underscored the importance of knowledge and said as India is developing as a knowledge society, it is acting with equal force. He elaborated on the strong foundation that has been created in the country during the last nine years to ignite young minds.

The Prime Minister said that more than 10 thousand ATAL tinkering labs in 700 districts have become innovation nurseries. More importantly, 60 percent of these labs are in government and rural schools. He informed that over 75 lakh students are working laboriously on more than 12 lakh innovation projects in Atal Tinkering Lab. This, the Prime Minister said, is a sign of young scientists coming right out of schools and reaching the far corners of the country and emphasising that it is everyone's duty to handhold them, nurture their talent and assist them in implementing their ideas. He noted the hundreds of start-ups that have been incubated at Atal Innovation Centres (AIC) and said that it is emerging as the new laboratories of the 'New India'. "The Tinker-preneurs of India will soon become leading entrepreneurs of the world," the Prime Minister said.

The clarion call by Hon'ble PM set the tone right, bringing in over 5000 young minds, 1500 visitors, 800 Exhibitors, 200+ Student Exhibitors & 100+ Startups from different parts of the country. The event also had 10+ technical sessions by different ministries/departments with primary focus on students. These special sessions carried the idea for technopreneurs to become entrepreneurs.

The major highlights of the expo included DrAIve, displayed by Gitanjali Chettri, Sneha Kumari, Aniska Rai. The device utilises artificial intelligence to assist drivers on hilly roads with unexpected turns and pedestrians on the road. Additionally, the device uses machine learning to detect accidents and send SOS messages to family members within seconds, thus increasing the chances of immediate medical assistance.

Atal Divyang Rat displayed by Mohit Tayde, Tarun Maitry, Mohnish Kumar Dhruv. The product is designed to assist specially-abled persons to use washrooms without any constraint through a chair-cum-vehicle. The product was developed after multiple interviews and interactions with students and parents of specially-abled students to allow them to use washrooms without any hesitancy.

SSPL-DRDO showcased the technology 'Underwater Wireless Optical Communication using Blue-Green Laser" developed by Dr. Fahim & Dr. Sita Ram, DBT-inSTEM's Dr Praveen Kumar Vemula showcased Novel Blood Bank & Anti pesticide protection suit, and M/s Panacea Medical Technology Pvt. Ltd, a beneficiary of Technology Development Board, DST displayed indigenously manufactured SBRT Enable Linear Accelerator (LINAC) (Siddharth II).

The 4-day long event was concluded today on 14th May, 2023. The valedictory ceremony was graced by the august presence of Dr Jitendra Singh, Secretaries of Participating Ministries & Stakeholders of the Tech Startups ecosystem. The event ended on a positive note, delivering a great opportunity to celebrate the spirit of innovation and entrepreneurship that drives our country's technological progress. It showcased cutting-edge technologies, innovative solutions that have the potential to transform various sectors and improve the quality of life of people.

The event created awareness about the various schemes and initiatives of the government to support technology startups and SMEs, it tried to reach out to the aspiring entrepreneurs and tech enthusiasts across the country. This fostered ever growing collaboration and partnerships amongst various stakeholders in the technology ecosystem. The event brought them together to exchange ideas, and explore possibilities.

The National Technology Week has precisely set the goals for next 25 years towards technological excellence. As India entered Amrit Kaal, the key focus is on building a robust innovation ecosystem that nurtures and supports the next generation of innovators and entrepreneurs. We need to invest in research and development, strengthen our intellectual property regime, and create an enabling policy environment that fosters innovation and growth. With the right kind of support and encouragement, India thrives for becoming truly world-class technology ecosystem that can compete with the best in the world.

Presentation of National Technology Awards 2023

To provide a platform of recognition to Indian industries and their technology provider who work to bring innovation to the market and help in contributing to the vision of "Aatma Nirbhar Bharat." Technology Development Board (TDB) sought applications for National Technology Awards under five categories Main, MSME, Startup, Translational Research and Technology Business Incubator from various industries for successful commercialization of innovative indigenous technology, scientists involved in research and Technology Business Incubators. This year a total of 11 winners are selected after a stringent two-tier evaluation process with panellist being eminent scientists and technologists. The details of National Awards for the year 2022-23 under five categories are as follows: -

CATEGORY A:

NATIONAL TECHNOLOGY AWARD (MAIN)

This award is given to an industrial concern which has successfully developed & commercialized an indigenous technology. In case, the technology developer / provider and the company commercializing the technology are two different organizations, each is eligible for award of Rs.25 Lakh and a trophy.

M/s MyLab Discovery Solutions Private Limited, Maharashtra

The company has successfully indigenised CNATSpert ID TripleH Detection Kit which offers all in one qualitative multiplex Real Time PCR test for simultaneous detection and discrimination of HIV, HBV, and HCV in donated blood in a single tube format.

Mylab's patented NATSpert ID TripleH Detection Kit offers all- in- one qualitative multiplex Real-Time PCR test for simultaneous detection and discrimination of transfusion-transmitted infections (TTIs) such as HIV, HBV and HCV in donated blood. In India, with high prevalence rate of HIV, HBV, and HCV, blood safety is a big challenge. Blood safety relies deeply on the accurate screening of blood for transmissible infections (TTIs). Every year thousands of people in India acquire deadly infections because of lack of appropriate preventive testing.

The Nucleic Acid Amplification Test (NAT) is considered the gold standard in blood safety screening and significantly reduces TTIs related to Hepatitis B and C and HIV. Some viruses, such as hepatitis B, have a longer incubation period of 40 to 50 days. The serology tests fail to detect the presence whereas NAT will find out such presence. NATSpert, the only made in India approved NAT test, is highly sensitive and is specific real time PCR technology for testing of individual donors and blood products. It can identify and detect multiple analytes in a single test, thus improving workflow turnaround time and sensitivity compared to the currently available commercial NAT kits. It is a high quality, affordable NAT test compare to existing commercially available tests. NATSpert can help blood banks to supply non-infected blood, avoid litigations that come their way due to infected blood stocks and improve their quality standards.

CATEGORY B:

NATIONAL TECHNOLOGY AWARD UNDER MSME CATEGORY

The award of Rs. 15 lakhs each in this category is given to MSMEs that have successfully commercialized the product based on indigenous technology. This year following company has been selected for this award: -

M/s Ideaforge Technology Limited, Maharashtra.

The company has indigenously developed Fixed-wing VTOL UAV- SWITCH UAV that can fly at diverse terrains and harsh environments, ranging from -30 °C to +55 °C for a variety of security and surveillance applications.

M/s. Electronics Devices Worldwide Private Limited, Maharashtra.

The company has developed Zero-ventilated induction cap sealing device with improved spatial distribution of optimized power loss.

M/s. XIOTZ Private Limited, Karnataka (Women led MSME)

The company has developed Managed Cyber Assurance Platform.

CATEGORY C:

NATIONAL AWARD UNDER TECHNOLOGY START-UP CATEGORY

This award is given to a technology start-up for development of indigenous technology with potential for commercialization. The award in addition to the trophy includes a cash award of Rs.15 Lakh.

M/s Kanpur Flower Recycling Private Limited, Uttar Pradesh

The company has developed Fleather- an animal free sustainable alternative to conventional leather made from flower waste.

M/s Sascan Meditech Private Limited, Kerala

The product awarded is Oral Scan handheld device to screen for early-stage cancers and for biopsy guidance.

M/s Xyma Analytics Private Limited., Tamil Nadu,

The company has produced Novel Multi-Point and Multi-Parameter Sensing to withstand extreme environment in Industrial applications using Patented Ultrasonic Waveguide based Technology.

M/s WellRx Technologies Private Limited., Haryana

The 'Oil and Gas Wells Rejuvenation Technologies to “Revive” the shut wells and “Increase” the Oil and Gas Production'.

M/s Qzense Labs Private Limited, Karnataka (Women led Start up)

The company has developed Early spoilage detection and shelf-life prediction for fresh food using artificial olfaction.

CATEGORY D

NATIONAL TECHNOLOGY AWARD- TRANSLATIONAL RESEARCH

This award is given for outstanding contribution of Women Scientist / Entrepreneur in commercializing innovative indigenous technologies.

Prof. Govindaraju Thimmaiah

For Outstanding contribution of Scientist in commercializing innovative indigenous technologies.

Professor Govindaraju has developed a novel drug candidate TGR63 for the treatment of Alzheimer’s disease.

CATEGORY E

NATIONAL TECHNOLOGY AWARD-TECHNOLOGY BUSINESS INCUBATOR

For outstanding contribution in techno-entrepreneurship development by way of promoting innovative, technology driven knowledge, intensive startup enterprises in different technological areas.' is presented to T-Hub Foundation, Telangana.

T-Hub (Technology Hub) is an innovation hub and ecosystem enabler. Based out of Hyderabad, India, T-Hub leads India's pioneering innovation ecosystem and is the world's largest innovation campus.

https://pib.gov.in/PressReleasePage.aspx?PRID=1924046

Press Information Bureau
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Ministry of Science & Technology

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A New Photonic Memory Developed with Multilevel Capability for Optoelectronic Data Storage Applications

A new photonic, functional memory based on tin oxide slanted nanorod arrays in which both the optical and electrical stimuli can be used to modulate switching characteristics shows potential for developing high-density and high-efficiency computing systems.

Currently, various research groups worldwide are designing and realizing non-volatile, ultrafast, reliable, functional memory systems that outperform traditional silicon-based flash memories. In this big data era, a new class of data storage devices that can overcome the physical limitations of the existing memory technologies is being pursued vigorously. One such class of memories is commonly known as memristor (an acronym for memory resistor), which can store and process data through electrical signals.

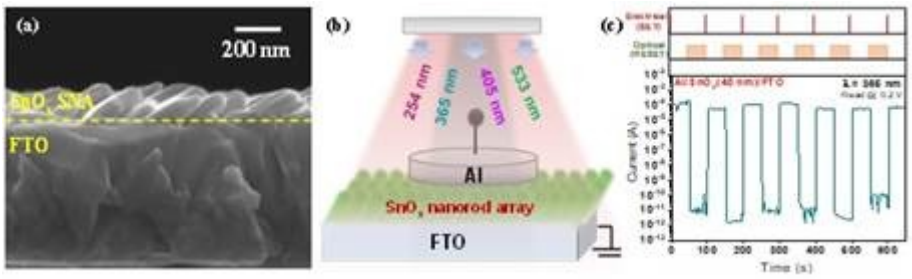

Figure 1. (a) Cross-sectional FESEM image depicting the SnOx slanted nanorod array. (b) Schematic of Al/SnOx/FTO device upon light illumination. (c) Optically controlled resistive switching in Al/SnOx/FTO devices under 365 nm light illumination for several switching cycles demonstrating the electrical SET and optical RESET processes.

Recently, researchers from the Centre for Nano and Soft Matter Sciences (CeNS), Bangalore, an autonomous institution of the Department of Science and Technology (DST), Govt. of India, have designed such a functional memory based on tin oxide slanted nanorod arrays that shows great potential for the development of high-density and high-efficient computing systems. In this restive memory (non-linear passive two-terminal electrical component which changes its internal

resistance between high and low resistance states), both the optical and electrical stimuli can be used to modulate the switching characteristics, including multilevel cell operation.

The CeNS team consisting of Swathi S. P., Athira M., and S. Angappane developed the photonic memory in which the tin oxide slanted nanorod arrays are used as an active layer. The tin oxide nanostructures are prepared by electron-beam evaporation through a technique called the glancing angle deposition (GLAD) technique.

The electron-beam evaporation is a physical vapor deposition method wherein a focussed electron beam is made to bombard the desired target material, which results in its vaporization, and, eventually, deposition of the target material onto the substrate. GLAD facilitates the preparation of complex nanostructures by manipulating the coordinates (tilt and rotation) of the substrate.

The researchers observed good switching characteristics of the memory devices, including low operating voltages, moderate ON/OFF ratio (refers to the ratio of current in the ON state (low resistance state--LRS) to the OFF state (high resistance state- HRS) of the memory device), longer endurance, and better retention with a self-compliance effect in the dark. Interestingly, an unusual negative photo response with an enlarged ON/OFF ratio of greater than 107 and a faster response time is observed under illumination ranging from ultraviolet (254 and 365 nm) to visible light (405 and 533 nm).

The negative photo response is characterized by the decrease of the current in the active layer of the device upon light illumination. They found that these devices can be electrically SET (switching the device from a high to low resistance state by applying voltage bias) to LRS and optically RESET (switching of the device from low to high resistance state upon exposure to the light) to HRS.

Remarkably, multiple low and high resistance states have been achieved by modulating the programming current and optical stimulus. Moreover, they have presented ample experimental evidence which suggests that the electric field-induced formation and light-induced dissolution of oxygen vacancies are responsible for the optically-stimulated resistance switching. In other words, multiple nanoscale conductive filaments composed of oxygen vacancies (primary defects in oxide-based memory devices) are formed on applying the electrical bias, and the photo-stimulated recombination of the surrounding oxygen ions with the vacancies results in the rupturing of the formed conductive filaments. In this manner, the local conductivity of the tin oxide nanorod array could be modified by the synergistic interplay between the electrical and optical means.

The research recently published in ACS Applied Materials and Interfaces can enable the design and development of photonic memories based on metal oxide nanostructures and help explore their potential applications in artificial visual memory and optoelectronics.

Publication link: https://doi.org/10.1021/acsami.2c22362

https://pib.gov.in/PressReleasePage.aspx?PRID=1923653

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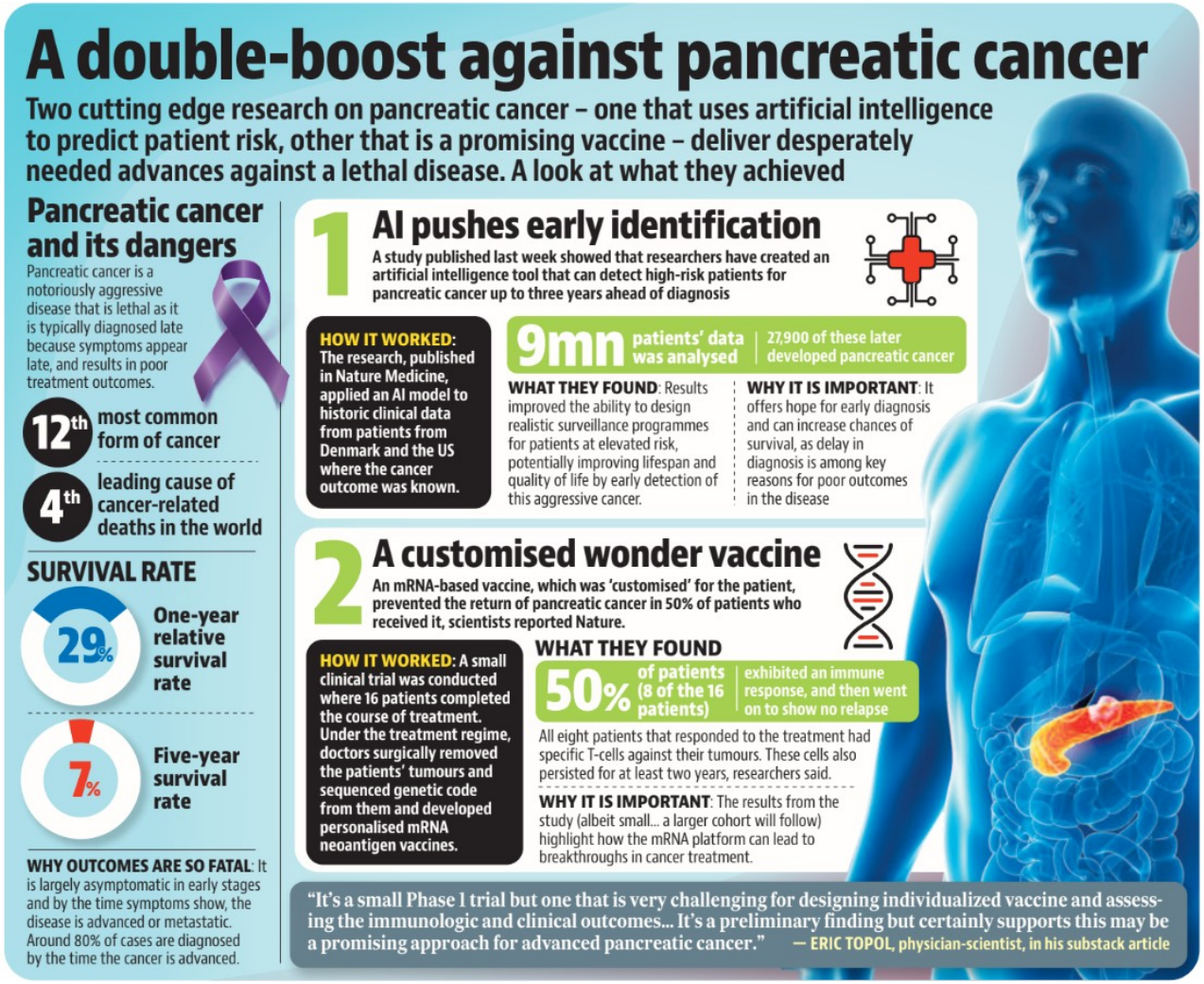

Hindustan Times

Sat, 13 May 2023

ISRO Likely to Launch NVS-01 Navigation Satellite on May 29

The Indian Space Research Organisation (ISRO) is likely to launch NVS-01, a navigation satellite on-board the Geosynchronous Launch Vehicle or GSLV Mk-II, on May 29, a senior official said on Saturday.

"The launch of NVS-01 is scheduled around May 29. This will be a return flight mission for the GSLV launch vehicle, which will carry the next generation NavIC satellite. This satellite will replace the IRNSS-1G satellite launched in 2016," said the official who did not want to be named.

IRNSS-1G was the seventh navigation satellite of the seven satellites constituting the IRNSS space segment. Its predecessors—IRNSS-1A, 1B, 1C, 1D, 1E and 1F—were launched by PSLV-C22,

PSLV-C24, PSLV-C26, PSLV-C27, PSLV-C31 and PSLV-C32 in July 2013, April 2014, October 2014, March 2015, January 2016 and March 2016, respectively.

To meet the positioning, navigation and timing requirements of the nation, ISRO has established a regional navigation satellite system called Navigation with Indian Constellation (NavIC). NavIC was erstwhile known as Indian Regional Navigation Satellite System (IRNSS).

NavIC is designed with a constellation of seven satellites and a network of ground stations operating 24x7. Three satellites of the constellation are placed in geostationary orbit and four satellites are placed in inclined geosynchronous orbit. The ground network consists of a control centre, precise timing facility, range and integrity monitoring stations, two-way ranging stations, etc.

NavIC offers two services--standard position service (SPS) for civilian users and Restricted Service (RS) for strategic users. These two services are provided in both L5 (1176.45 MHz) and S band (2498.028 MHz). NavIC coverage area includes India and a region up to 1,500km beyond Indian boundary. NavIC signals are designed to provide user position accuracy better than 20m and timing accuracy better than 50ns.

The NVS-01 satellite is to replace the IRNSS-1G satellite that was launched in 2016 and has a mission life of 12 years. Among the still functioning satellites in the constellation, the earliest to be launched is IRNSS-1B launched in 2014 with a mission life of 10 years.

https://www.hindustantimes.com/india-news/isro-to-launch-nvs-01-navigation-satellite-on-gslv-mk-ii-on-may-29-to-replace-irnss-1g-in-india-s-navic-system-101683979071113.html