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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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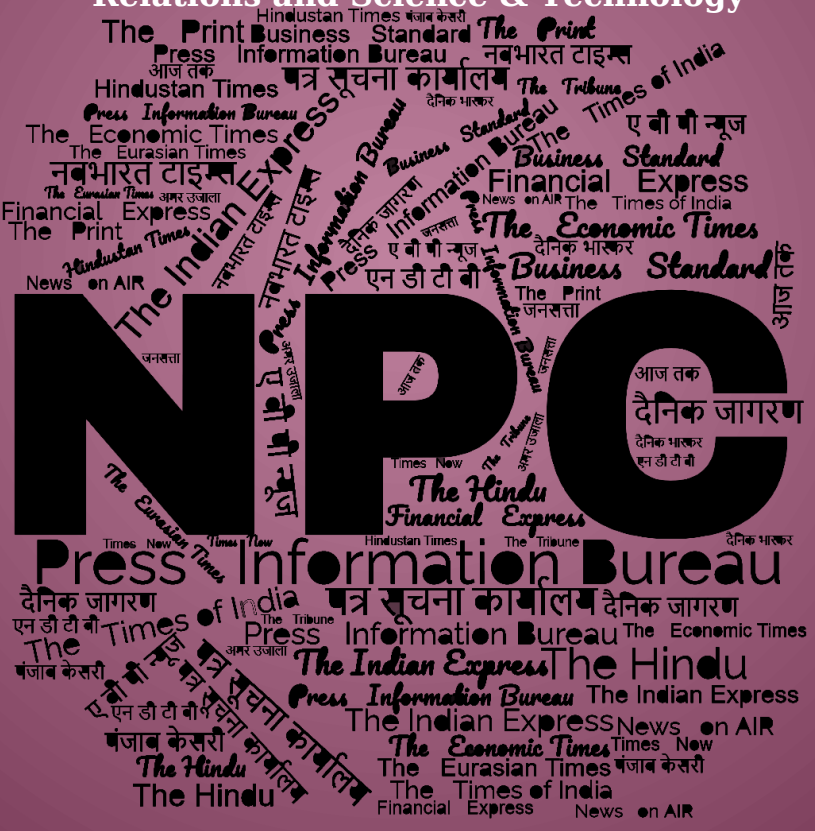

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Mon, 16 Oct 2023

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केंद्रीय रक्षा एवं पर्यटन राज्यमंत्री अजय भट्ट ने हल्द्वानी के गोरापड़ाव में रक्षा जैव ऊर्जा अनुसंधान संस्थान, डी.आर.डी.ओ परिसर में आयोजित किसान जवान विज्ञान मेले में हिस्सा लिया। इस दौरान उन्होंने अनुसंधान केंद्र का शुभारम्भ किया। कार्यक्रम में किसानों को विभिन्न स्टालों के माध्यम से खेती की नई तकनीक और सौर ऊर्जा के बारे में जानकारी दी गयी। इस मौके पर श्री अजय भट्ट ने बताया कि इस केंद्र में विभिन्न अनुसंधान किये जा रहे है। उन्होंने कहा कि केंद्र के माध्यम से सीमांत किसानों से लेकर जवानों तक कृषि उपज पहुंच रही है। उन्होंने कहा कि भविष्य में किसानों को इन अनुसंधानों का लाभ मिलेगा। वही संस्थान के वरिष्ठ वैज्ञानिक डा. अनफाल ने बताया कि वह विज्ञान से किसानों को जोड़ने का काम कर रहे हैं।

https://newsonair.gov.in/Gujarati/Language-Main-News.aspx?id=146093

Defence News

Defence Strategic: National/International

Press Information Bureau
Government of India

Ministry of Defence

Mon, 16 Oct 2023

Ministry of Defence Signs Contract with Cochin Shipyard Limited for Mid Life Upgrade and Re-Powering of INS Beas

The Ministry of Defence signed a contract on October 16, 2023, in New Delhi for Mid Life Upgrade and Re-Powering of "INS Beas" with Kochi-based M/S Cochin Shipyard Limited (CSL) at an overall cost of Rs. 313.42 Cr.

INS Beas is the first of Brahmaputra Class Frigate to be re-powered from Steam to Diesel Propulsion. After completion of Mid Life Upgrade and Re- Powering in 2026, INS Beas will join the active fleet of the Indian Navy with a modernized weapon suite and upgraded combat capability.

The transformative maiden re-powering project marks a significant stride in the maintenance philosophy of the Indian Navy and repair capabilities of M/s CSL. The project would involve more than 50 MSMEs and would lead to generation of employment for more than 3500 personnel.

The project will be a proud flag bearer of Atmanirbhar Bharat in consonance with the Make-in-India initiative of the Government of India.

https://pib.gov.in/PressReleasePage.aspx?PRID=1968058

Press Information Bureau
Government of India

Ministry of Defence

Mon, 16 Oct 2023

INS SUMEDHA at Lagos, Nigeria

INS Sumedha made a port call at Lagos, Nigeria on 13 October 2023 as part of its deployment to Gulf of Guinea. The visit was aimed to further strengthen diplomatic relations, reinforce maritime co-operation, and boost interoperability between the two navies. Various activities including professional interactions, planning conferences in harbour and exercises at sea are scheduled for exchange of best practices.

In addition to social engagements and sports fixtures, the ship conducted a Medical Camp along with Nigerian Navy doctors for the local populace. Sumedha will also be undertaking Maritime Partnership Exercise (MPX) with NNS Unity, with the aim to augment interoperability between both navies.

This is the Indian Navy's second deployment to the piracy prone Gulf of Guinea (GoG)patrol after the maiden GoG patrol was undertaken by INS Tarkash in Oct 22. The Indian Navy aims to partner with Regional countries in combating piracy & ensuring secure seas for unimpeded trade.

INS Sumedha, commanded by Cdr MC Chandeep, is third of the indigenously designed and manufactured 'Saryu' Class Naval Offshore Patrol Vessel (NOPV). The ship has the capability to be deployed for multiple roles independently and in support of Fleet Operations. It is equipped with weapon systems, sensors, state of art navigation, communication systems and Electronic Warfare suites. INS Sumedha has undertaken various Fleet support operations, coastal and offshore patrolling, ocean surveillance and HADR missions in the past, including the recently conducted Op Kaveri for evacuation of Indian diaspora from war hit Sudan in April 23.

Nigeria and India have traditionally enjoyed warm and friendly relations, sharing common values of democracy, development and secularism. A number of bilateral arrangements for defence co-operation and cultural exchange exist between the two countries. The deployment also highlights warm and cordial relation of India with West African countries.

https://pib.gov.in/PressReleasePage.aspx?PRID=1968203

REPUBLICWORLD.COM

Mon, 16 Oct 2023

NAL Hands over AMCA's Carbon Composite Flaperon Test Box to DRDO's ADA

The Aeronautical Development Agency (ADA), in collaboration with CSIR-NAL, has successfully designed and developed a cutting-edge Flaperon Structural Assembly for the Advanced Medium Combat Aircraft (AMCA) program, India's to-be 5th generation stealth fighter jet, achieving a breakthrough in composite technologies.

This milestone was marked by the completion of the AMCA's Flaperon Test Box Assembly on October 5, 2023, a significant day for the Indian aerospace industry. According to sources from the National Aerospace Laboratories director's office, the assembly has been officially handed over, symbolising a milestone in this collaborative effort.

ADA gets a breakthrough in composite technologies

As per NAL, the project utilised 'state-of-the-art' intermediate modulus grade carbon composites (IM7), a futuristic material with an exceptional strength-to-weight ratio. ADA and NAL worked together to study robust, mid-level carbon materials.

The flaperon assembly, a critical component of the AMCA, incorporates co-cured technology, a cutting-edge approach to composite fabrication. This achievement is set to revolutionise the design and production of medium-weight combat aircraft, as the high-strength carbon composites promise a reduction in overall weight, according to NAL's official statement.

Metal-cutting for AMCA

Last year, R Madhavan, the Chairman and Managing Director of Hindustan Aeronautics Limited, marked the onset of AMCA's technology demonstrator's development by launching the 'Metal Cutting for Titanium Bulkhead of AMCA aircraft' at the Aircraft Manufacturing Division, Nashik, on July 13. The event was also attended by AK Ghosh, Project Director (AMCA) at ADA, along with senior officers from DMRL, ADA, and other key government agencies.

Future prospects for AMCA

Looking ahead, the first prototype rollout of the AMCA is anticipated in the near future, following HAL's plan to commence production between 2026-28. However, full-fledged production operations are slated to kick off in 2029, as per a prior statement from HAL.

In parallel, the AMCA program would in the future see the augmentation of an indigenous 125kN thrust engine. DRDO would develop this in a joint venture with another firm. As of now, Rolls Royce and Safran are leading the choice of a JV with DRDO. Indian Defence Minister Rajnath Singh also visited the Safran facilities during his France visit on October 11, 2023.

Defence State Minister Ajay Bhatt, last year, highlighted the strategic importance of the AMCA program, emphasising its cost-effectiveness in comparison to similar fifth-generation aircraft.

"The process for obtaining Cabinet Committee on Security's (CCS) approval for the design and prototype development of the Advanced Medium Combat Aircraft (AMCA) has been initiated. 5th Generation fighter aircraft, due to very special features, are costlier than 4th Generation fighter aircraft. Since AMCA is an indigenous 5th Generation aircraft, it is less costly than similar aircraft available outside," stated the State Defence Minister.

The AMCA project is India's second foray into fifth-generation fighter aircraft, following the not-so-satisfactory collaboration with Russia on the SU-57 Felon program, and it highlights India's 'Atma Nirbhar' initiative in pursuit of self-reliance.

https://www.republicworld.com/defence/defence-technology/nal-hands-over-amcas-flaperon-test-box-to-drdos.news

THE TIMES OF INDIA

Mon, 16 Oct 2023

All Arms of Ministry of Defence to Work Together to Produce Best Results: CDS General Chauhan

The Chief of Defence Staff (CDS) General Anil Chauhan on Monday said that the other arms of the Ministry of Defence need to work together to move the process of integration to the next level.

The CDS Chauhan was in the city to inaugurate the newly developed pay accounting system named 'Falcon' at the Principal Controller of Defence Accounts (Officers).

Chauhan, the seniormost serving military officer of the country, said, "The government approach is to integrate all the departments to produce the best results. Keeping that approach in mind, we also need to work towards that direction. I would urge arms and departments of the ministry to work in tandem to achieve the desired objectives of the government."

The 'Falcon' system is embedded with advanced software to facilitate quick disbursement of the pay and allowances.

Sanjay Kumar Singh, the controller of the PCDA (O), told TOI, We aim to address all queries raised by the army officers at the earliest. The newly developed system is effective and contemporary."

It is a result of a joint effort by the Information Technology and Software Development Centre and PCDA (O), which is responsible for disbursing pay and allowances of all serving army officers.

"The Falcon system had been under testing for the last few months. It has been tested rigorously by feeding varied real-time inputs," said the deputy controller of defence accounts Lehana Singh, who played a key role in developing the system.

A senior official from the PCDA (O) told TOI, "The old system 'Sulekha' that was in use since 2010 was not functioning properly. The system was not able to process the queries raised by the army officers on time. It was mainly due to outdated software in it."

Calculating the pay and allowances of the army is a complex and tedious task. It is being decided on the location of the unit and movement of the officers throughout the month, said the officials.

"There are over 70 types of allowances and over 400 types of scenarios that we have to consider before disbursing their pay. Thus, we have to have a full-proof system in place for quickly releasing their accurate charges on time," the official added.

The PCDA(O) pays salaries and allowances to over 50,000 serving officers, including the Chief Of Army Staff (COAS) General Manoj Pande, of the Army.

https://timesofindia.indiatimes.com/india/all-arms-of-ministry-of-defence-to-work-together-to-produce-best-results-cds-general-chauhan/articleshow/104475783.cms

Hindustan Times

Tue, 17 Oct 2023

Known for Wine, Nashik is the Next Aircraft Manufacturing Hub as HAL Spreads Wings

Nashik, India's wine capital, is set to emerge as the next hub for aircraft manufacturing in the country, with Bengaluru-based state-owned plane maker Hindustan Aeronautics Limited (HAL) preparing to activate new production lines for the indigenous light combat aircraft (LCA) Mk-1A and Hindustan Turbo Trainer-40 (HTT-40) planes to meet the Indian Air Force's growing requirements for fighter jets and basic trainers, senior officials aware of the development said.

The new plant for the Mk-1As will enable HAL to advance the deliveries of the 83 such fighters ordered by IAF for ₹48,000 crore in February 2021 by at least a year, HAL chief CB Ananthakrishnan said in an interview. His comments came days after IAF chief Air Chief Marshal VR Chaudhari announced plans to order 97 more LCA Mk-1As at an estimated cost of ₹67,000 crore.

HAL has a capacity to build 16 LCA Mk-1As every year in Bengaluru, and the Nashik line will help the firm ramp up production to a total of 24 jets.

The first Mk-1A will be delivered to IAF in February 2024, and the last of the 83 jets by 2028 (instead of 2029, the contracted delivery schedule), Ananthakrishnan said. Timely delivery is a top priority for IAF, which is grappling with a shortage of fighter squadrons.

"We are hoping to achieve a targeted minimum capacity of building 24 fighters. Nashik has been a big aircraft division that was earlier manufacturing Sukhoi-30s. Building eight LCA-Mk-1As every year with an additional production line is not going to be a difficult job. This will help us make more fighters available to IAF at the earliest," he said.

The aircraft manufacturing division at Nashik, set up in 1964, has produced MiG variants and Su-30s under licence.

The new Mk-1A production line is being set up fast to begin deliveries from Nashik.

"We have already started installing the jigs, fixtures and other equipment. We expect the first assembly to happen in December 2024. Our target is to deliver three aircraft from Nashik in 2024-25 and eight every year thereafter," Ananthakrishnan said.

The ancillary industry ecosystem in and around Nashik is good, and several micro, small and medium enterprises will be involved in LCA Mk-1As production, especially in supplying structural parts and components, he said.

If LCA Mk-1A production rate increases to 24, then the timelines will be met considerably, said former IAF chief Air Chief Marshal Fali Homi Major (retd). "But it should be a constant effort to ensure that HAL maintains a 24-aircraft per year production rate. This will help IAF reach the desired force levels," he said.

IAF's plans to go in for 97 more LCA Mk-1As reflected its confidence in the firm's ability to fulfil orders within the stipulated timeline, he said.

Will the Mk-1As to be ordered come with improvements over the first lot of 83 jets?

"HAL hasn't gone into those details yet. The existing (83) Mk-1As will come with additional systems and features IAF wanted in LCA Mk-1. Once we get to the technical discussions, we will

have to see whether any further improvements are required. If IAF wants it and if it fits within the design, we should be able to accommodate the customer's needs. Improvements are possible (in the next 97)."

On October 4, HAL handed over the first trainer version of LCA Mk-1 to Chaudhari in Bengaluru, with the twin seater set to fill a key training role and double as a fighter if needed.

The aircraft is part of an earlier order for 40 Mk-1 jets in the initial operational clearance (IOC) and the more advanced final operational clearance (FOC) configurations — the first variants of LCA. Of the 40 Mk-1s, IAF has inducted 32 single seater jets and raised two LCA squadrons. The remaining eight aircraft are trainers. Seven more twin seater aircraft will be delivered to IAF by March 2024.

LCA is set to emerge as the cornerstone of IAF's combat power in the coming decade and beyond. IAF, the world's fourth largest air force, is expected to operate around 350 LCAs (Mk-1, Mk-1A and Mk-2 versions), with a third of those already ordered, some inducted, and the rest figuring prominently on the air force's modernisation roadmap and expected to be contracted in the coming years. The newer variants, Mk-1A and Mk-2, will come with significantly improved features and technologies over the Mk-1 aircraft.

"LCAs will be a very formidable part of the future fighter fleet. Given their design architecture, the aircraft can be continuously upgraded to meet IAF's requirements," Major added.

Basic trainers will start rolling out of Nashik in 2025-26, said DK Sunil, director (engineering and R&D), HAL.

In March, the defence ministry awarded a ₹6,838-crore contract to HAL for 70 HTT-40 planes. The new aircraft, a longstanding need, will be used for ab initio training of IAF pilots.

"HAL will deliver 12 trainers to IAF in 2025-26. Ten of those will be built at Nasik and the remaining two in Bengaluru. Deliveries will follow at the rate of around 20 every year, with 15 of the aircraft to be built in Nashik," Sunil said.

Currently, ab initio training of all rookie pilots is carried out on Swiss-origin Pilatus PC-7 MkII planes and Kiran Mk-1/1A trainers. Those training to become fighter pilots further train on the British-origin Hawk advanced jet trainers.

A repeat order for 35 HTT-40s is likely, the officials said.

The LCA project was sanctioned in 1983 as a replacement for the Soviet-origin MiG-21 fighter fleet. IAF raised its first LCA squadron with two aircraft in July 2016. The existing Mk-1 and Mk-1A variants will replace IAF's MiG-21 fighters. IAF currently operates more than 50 MiG-21 Bison aircraft (three squadrons), the latest and the last variant of the MiG-21. It is set to retire these squadrons by 2025.

The Mk-2 aircraft is planned as a replacement for IAF's MiG-29s, Mirage-2000s and Jaguar fighters that will start retiring in the coming decade.

https://www.hindustantimes.com/india-news/known-for-wine-nashik-is-the-next-aircraft-manufacturing-hub-as-hal-spreads-wings-101697481119234.html

REPUBLICWORLD.COM

Mon, 16 Oct 2023

India & Bangladesh Conclude Joint Exercise SAMPRITI-XI Augmenting Bilateral Defence Ties

The India-Bangladesh joint military exercise SAMPRITI's 11th edition concluded on October 16 at Umroi, Meghalaya. This 14-day exercise, which commenced on October 3, witnessed the participation of approximately 350 personnel from both nations to amplify the bilateral defence cooperation between India and Bangladesh.

SAMPRITI-XI, characterised by its emphasis on Sub-Conventional Operations as outlined in Chapter 7 of the UN mandate, comprised a Command Post Exercise (CPX) and a Field Training Exercise (FTX), culminating in a Validation Exercise. This 'comprehensive' training program, as per Army officials, was designed to enhance interoperability, share tactical expertise, and promote best practices between the Indian and Bangladeshi armies.

The Bangladesh contingent, led by Brigadier General Mohammed Mafizul Islam Rashed, Commander of the 52 Bangladesh Infantry Brigade, was consisted of 170 personnel. The lead unit from the Bangladesh Army side was the 27 Bangladesh Infantry Regiment. On the Indian side, troops from a battalion of the Rajput Regiment formed the main contingent, under the leadership of Brigadier SK Anand, Commander of a Mountain Brigade.

The exercise, as per the Ministry of Defence also witnessed the participation of personnel from various units including artillery, engineers, and other supporting arms and services from both sides.

The CPX, a important component of the exercise, involved 20 officers from each contingent, focusing on decision-making following thorough deliberations. Subsequently, the FTX validated grassroots-level operations, encompassing a series of joint tactical drills for counter-terrorist operations such as hostage rescue, crowd control measures, and the utilisation of helicopters in such operations. The Validation Exercise, conducted on October 14 and 15 at the Darranga Field Firing Range, Assam, showcased the collective prowess of both armies in executing Sub-Conventional Operations, officials added.

Throughout the exercise, participants were afforded the opportunity to witness the capabilities of 'Atmanirbhar Bharat' through an Equipment Display, further highlighting the strides made by India in self-reliance in the defence sector. SAMPRITI-XI beyond strengthening the strategic ties, as per MoD, also fostered deeper cultural understanding and mutual benefits derived from shared experiences in Sub-Conventional Operations.

https://www.republicworld.com/defence/indian-armed-forces/india-bangladesh-concludes-sampriti-xi-exercise.news

THE TIMES OF INDIA

Mon, 16 Oct 2023

Indian Army Plans to Start 'Chanakya Defence Dialogue' Talk Series

Seeking to start a forum for discussion on important security matters, the Indian Army is planning to start a dialogue series named the Chanakya Defence Dialogue.

As per sources, the curtain raiser of the event is planned for October 25 or 26, where Chief of Army Staff General Manoj Pande is likely to participate in a talk.

The first edition of the dialogue series is tentatively scheduled for the first or second week of November.

Officials said that it will be a regular forum that will aim to get together the finest minds across the global defence and strategic arena under one roof, forging a nexus where insights will spark and philosophies will intertwine.

The Army is collaborating with the prominent think tank, Centre for Land and Warfare Studies (CLAWS), for the conduct of this event.

It will be a congregation of participants from a vast array of nations, including Australia, France, Japan, and the US.

It will be a two-day gathering of eminent speakers, military strategists, ambassadors, and leading thinkers from the realms of defence and strategic affairs. It will deliberate on the wide range of security challenges and strategies in the pivotal regions of South Asia and the Indo-Pacific.

This will be a pioneering effort by the Indian Army to amalgamate wisdom, strategy, and expertise, reflecting on themes like Neighbourhood Forces, the decisive Indo-Pacific frontier, and the palpable impact of emerging technologies on defence and security.

https://timesofindia.indiatimes.com/india/indian-army-plans-to-start-chanakya-defence-dialogue-talk-series/articleshow/104473546.cms

THE TIMES OF INDIA

Tue, 17 Oct 2023

India, UK Hold First '2+2' Ahead of Possible Rishi Sunak Visit

India and the United Kingdom held their inaugural '2+2' foreign and defence dialogue on Monday, ahead of a possible visit by Prime Minister Rishi Sunak later this month, looking to ramp up defence, security and trade ties. The two sides are currently also engaged in discussions to iron out the remaining differences over a free trade agreement that they hope to finalise before Sunak's visit.

The British prime minister's visit to India last month for the G20 summit also saw on the margins a bilateral meeting between Sunak and Prime Minister Narendra Modi in which the leaders reaffirmed their joint commitment to a balanced, mutually beneficial and forward looking FTA.

Conducted at the level of senior officials, the 2+2 dialogue is a mechanism to discuss and review all aspects of the India-UK comprehensive strategic partnership, said the government.

In the talks on Monday, both sides expressed satisfaction at the regular high level political exchanges and interactions which have provided guidance and momentum to India-UK multi-faceted ties.

"They expressed happiness on the progress made in diverse areas of India-UK Roadmap 2030 including political exchanges, economic cooperation, defence and security, people to people ties, as well as regional and multilateral cooperation," said the government in a statement.

"The officials had an opportunity to exchange assessments about recent international developments including in the Indo-Pacific region, given their shared vision for peace, stability and prosperity

and for a free, open and inclusive Indo-Pacific region. They also considered the possibility of enhancing collaboration in areas of counter-terrorism, HADR (high availability disaster recovery) and maritime security," said the government.

https://timesofindia.indiatimes.com/india/india-uk-hold-first-22-ahead-of-possible-rishi-sunak-visit/articleshow/104480862.cms

REPUBLICWORLD.COM

Mon, 16 Oct 2023

Spain's S-80 and Germany's Type 214 Submarines Compete for Advanced Naval Contract

Comparative Analysis: Clash of Titans

Silent Warriors: Both submarines excel in stealth and acoustic signature reduction, ensuring their ability to operate covertly.

Endurance Matters: Spain's S-80 takes the lead in submerged endurance thanks to its AIP system, while Germany's Type 214 offers exceptional range and global reach.

Lethality and Versatility: The S-80's heavier armament, including heavyweight torpedoes and anti-ship missiles, gives it an edge in terms of firepower, making it a formidable force in both anti-submarine and anti-surface warfare. However, the Type 214's torpedoes and missiles are nothing to scoff at, and its international success speaks volumes.

As these two contenders vie for a significant naval contract, the future of submarine capabilities hangs in the balance. Each model's unique features and advantages contribute to the decision-making process, which will undoubtedly have a profound impact on naval operations in the coming years.

Germany's Type 214 submarine: The German U-Boat legacy continues

Germany's Type 214 submarines, built by Howaldtswerke-Deutsche Werft (HDW), are a continuation of the nation's proud U-boat legacy, upgraded with modern technology and capabilities.

Stealth and Silence: The Type 214 submarines are renowned for their low acoustic signature, ensuring they remain undetected in the underwater domain.

Global Reach: These submarines possess impressive endurance and range, allowing them to operate far from their home shores and project power on a global scale.

Collaborative Efforts: Germany has a strong track record of exporting submarines, with several nations opting for the Type 214, showcasing the boat's international appeal.

Spain's S-80 submarine: The silent Spanish sentinel in detail

Spain's S-80 submarine, developed by the Spanish shipbuilder Navantia, is a testament to modern maritime engineering. These submarines are known for their impressive size and advanced systems. Underwater Prowess: The S-80 boasts a robust AIP (Air-Independent Propulsion) system, providing the vessel with extended submerged endurance. This feature allows the submarine to stay submerged for weeks, enhancing its stealth capabilities. Lethal Arsenal: Armed with heavyweight torpedoes and anti-ship missiles, the S-80 can engage both surface and underwater targets, making it a versatile platform for naval operations.

Sophisticated Sensors: The submarine is equipped with state-of-the-art sensors and combat management systems, enhancing its situational awareness and overall effectiveness.

Weapons and Acoustic Signatures

Differences in weaponry specifications are present in the Type 214 and the Navantia ship. The Type 214 is equipped with eight 533mm torpedo tubes, offering a variety of offensive options. The Navantia vessel houses six guns of equal calibre, providing a mirroring weapon storage capacity.

Both submarines prioritize stealth and feature reduced acoustic signatures to maintain a low profile. The Type 214 gains an advantage with its advanced sonar technology, while the Spanish Navantia vessel counters this with a meticulously designed hull and cutting-edge sonar systems.

Spanish AIP System

The S-80's air-independent propulsion system relies on a bioethanol processor, composed of a reaction chamber and Coprox intermediate reactors. This processor converts bioethanol to high-purity hydrogen, with fuel cells by UTC Power serving as the primary energy source. The complex system, known as the Reformer, uses bioethanol as fuel, oxygen stored as a liquid, and produces hydrogen and carbon dioxide.

A new system, SECO2 (or CO2 removal system), is designed to dissolve the CO2 in water until it becomes undetectable. The AIP in the S-80 submarine has at least 300 kW strength, powered by a permanent magnet electric motor. This motor drives a fixed propeller designed to avoid cavitations, even at high velocity. Spain's Ministry of Defense initiated a program to develop a Spanish fuel cell to reduce costs and reliance on foreign manufacturers. A 300 kW prototype is set to be developed within a six-year timeline.

Size and Displacement

One critical aspect under scrutiny is the displacement and size of the submarines. Spain's S-80, slightly larger at just over 80 meters and displacing 2,200 tons, offers more room for onboard systems and crew. However, this advantage might lead to a larger acoustic signature. The Type 214 from Germany accommodates 27 crew members, whereas the S-80 can house 32.

The Type 214 boasts a diesel-electric system powered by two diesel engines and utilizes Siemens hydrogen fuel cells for its AIP. The Spanish S-80 relies on three diesel engines for propulsion and incorporates an AIP system powered by bioethanol processors. The German-made Type 214 features 20 knots underwater speed and a maximum surface travel range of 12,000 miles. In contrast, the S-80 has an underwater speed of 19 knots and an 8,000-mile range on the surface.

Introduction

The race for a contract involving advanced submarines takes centre stage as Spain's S-80 model and Germany's Type 214 go head-to-head in a competition that could redefine naval capabilities. What sets these contenders apart is their incorporation of air-independent propulsion (AIP) systems, allowing them to remain submerged for extended periods, typically a feature found in nuclear-powered submarines.

Apart from Spain and Germany, other formidable contenders are making their presence felt. Russia's Rubin is offering the Amur 1650, while Korea's Daewoo Shipbuilding & Marine Engineering (DSME) presents the Chang Bogo class. France's Naval Group brings the Scorpene into the arena, a model already utilized by India.

https://www.republicworld.com/defence/war-games/spain-s-s-80-vs-germany-s-type-214-submarine.news

INDIA TODAY

Mon, 16 Oct 2023

Israel may Deploy Iron Beam Laser System Ahead of Schedule amid War with Hamas

Israeli defence forces may deploy laser weapons on the battlefield as the war between Israel and Hamas entered its 10th day on Monday. The Iron Beam air defence system that Israel may deploy, can fire powerful beams of light that can destroy fast-moving projectiles.

It was earlier planned to enter service in 2025. However, following the outbreak of war, the Israeli Ministry of Defence may consider deploying it sooner. Local Israeli media says Israeli forces are now accelerating Iron Beam's deployment and beginning tests, The Telegraph reported.

WHAT IS IRON BEAM LASER SYSTEM

The Iron Beam was first unveiled in 2014 but is yet to see action in Israel. Built by Rafael Advanced Defense Systems, the Iron Beam system is a directed-energy weapon air defence system that fires powerful beams of light.

Dr Yehoshua Kalisky of the Institute for National Security Studies said that while it is uncertain how long it will take but the system could be "operational very soon".

"The laser works. The only problem that I see is to integrate it into all the early warning systems. It's not a standalone system. It must be coupled with all the air defence," he said.

HOW IRON BEAM IS BETTER THAN IRON DOME

Iron Dome is an Israeli mobile all-weather air defense system built by Rafael Advanced Defense Systems and Israel Aerospace Industries.

The Iron Beam was considered as a cheaper and flexible alternative to work alongside the Iron Dome missile defence system.

Instead of the interceptors fired by Iron Dome, which can cost $60,000 each, one could send a laser beam that costs just a few dollars, according to a missile defence expert at the Israeli Ministry of Defence.

The Iron Beam is also smaller and lighter than Iron Dome, which makes it easier to move and to hide.

DISTADVANTAGES

The Iron Beam cannot operate effectively in wet conditions. Even in optimum conditions, the laser loses 30 to 40 percent of its potential energy to atmospheric moisture before hitting the target.

The Iron Beam requires a direct line of sight between the system and its target, making its placement far more critical, unlike Iron Dome.

The Iron Beam also has a much slower rate of fire, requiring five seconds or so to transmit sufficient energy to destroy its target.

As of now, the functionality of the Iron Beam on the battlefield is down to speculation.

ISRAEL-HAMAS WAR

Hamas launched a wave of attacks on Israel on Saturday, killing hundreds of people, in the biggest escalation in the conflict in decades. Since then, the attack has killed more than 1,300 people in Israel while the Israeli counter-airstrikes have killed more than 2,750 people in Gaza. Israel has claimed roughly 1,500 Hamas militants were killed inside Israel.

As Hamas butchered hundreds during its October 7 attack on Israeli soil, it took back around 200 Israelis hostage. This is the biggest hostage crisis that Israel has ever faced.

https://www.indiatoday.in/amp/world/story/israel-hamas-war-iron-beam-laser-system-destroy-fast-moving-projectiles-2449633-2023-10-16

THE TIMES OF INDIA

Mon, 16 Oct 2023

Israel Air Force Taking Ground Forces Commanders over Gaza Strip ahead of Expected Manoeuvre: Report

Amid its ongoing conflict with Hamas, the Israeli Air Force has been flying senior commanders of ground forces on sorties over the Gaza Strip in recent days to acquaint them with the region and give them a bird's eye view of the area where the military is expected to manoeuvre as part of a ground incursion, The Times of Israel reported.

Brigade and battalion commanders, many of whom have never entered into Gaza Strip were shown from combat helicopters where ground troops are expected to enter and advance during the looming ground offensive. On Saturday, the IDF said that it was finalising preparations for a "coordinated attack from the air, sea and land."

The Israeli military on Sunday said that it had hit and killed a senior Hamas commander Muataz Eid. He was the head of national security for Hamas's southern district. According to the military, it had struck more than 250 targets throughout the Strip during the day, The Times of Israel reported.

The Israeli military on Sunday continued to move closer towards a ground invasion of the Gaza Strip. As of Sunday evening, more than 1300 lives have been claimed since the Hamas attack on Israel on October 7. As of Sunday evening, 289 soldiers and 51 police officers have been killed in the clashes between Israel and the terror group.

After Hamas's attack on Israel, the Israel Defence Forces (IDF) has carried out aerial attacks targeting terrorist infrastructure in Gaza. According to the Health Ministry in Gaza's statement on Sunday evening, 2,670 people had been killed and 9,600 others injured since the conflict began between Israel and Hamas, according to The Times of Israel reported.

Israel Defence Forces called on the residents of northern Gaza to evacuate and move to the southern part. On Sunday, Rear Admiral Daniel Hagari said that more than 600,000 Palestinians from Gaza City had evacuated south despite Hamas's attempts to stop people from leaving. The IDF has warned that it will heavily target northern Gaza in the coming days, The Times of Israel reported.

Israeli Defence Forces Spokesperson Lieutenant Colonel Peter Lerner said that Israel Defence Forces have carried out hundreds of strikes against Hamas operatives since its attack on October 7. He asserted that Israel continues to act in order to destroy and demolish the capabilities of Hamas, adding that the terrorist group will not be allowed to use the Gaza Strip as a staging ground for attacks against Israel and our civilians.

While addressing a media briefing, he said, "We are in day 10 of our war on Hamas after the government instructed us to destroy Hamas's capabilities, its infrastructure, pursue its leaders, and restore security and safety to the people of Israel. Indeed, throughout the last ten days, the IDF has conducted hundreds of strikes against Hamas operatives, the leadership, its institutions and its terrorist infrastructure."

"The terrorist infrastructure includes advanced capabilities such as drone, explosives, rockets, tunnel capabilities, and the Hamas leaders themselves. I can say and confirm it at this time that we have targeted and killed several of their leaders, including terrorists that actually participated in the butchering of babies in their bedrooms, and we continue to act in order to destroy and demolish Hamas' capabilities, governing and military capabilities. Hamas will not be permitted to govern the Gaza Strip as a staging ground for attacks against Israel and our civilians," he added.

He said that there are still concerns of security in southern communities of Israel.

"On day 10, I can still confirm that there are still concerns of security in southern communities of Israel. Over the last 24 hours, there was three engagements in and around the border area with terrorists that attempted to attack Israel, including in ..... I can confirm that in each of the engagements, every time a terrorist meets an IDF soldier, the terrorist is killed."

https://timesofindia.indiatimes.com/world/middle-east/israel-air-force-taking-ground-forces-commanders-over-gaza-strip-ahead-of-expected-manoeuvre-report/articleshow/104465878.cms

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Magnetic-Stress as a New Chauffeur of Metal-Insulator Transition

The mystery behind the peculiar metal-insulator transition exhibited by certain materials under external stimuli such as temperature, pressure, electric fields has been decoded by scientists, paving the way towards designing functional materials and devices like sensors and actuators.

Materials primarily exist in one of the two fundamental electronic states: metallic or insulating. However, certain materials exhibit the remarkable ability to transition between these two states under external stimuli such as temperature, pressure, electric fields, and more. Since the initial discovery of this phenomenon in magnetite in 1939, the transition between the metal-insulator phases (MIT) has continued to captivate generations of scientists and engineers. Their foray into this area has offered critical scientific insights and applications in various devices and at the same time brought in the necessity of new materials that can exhibit metal-insulator phase transition for industrial applications.

Chromium nitride (CrN) is an example of such a material, wherein the metal-insulator transition is anticipated to be instigated by an unconventional force arising from the anisotropic magnetic stress.

However, the mechanism remained experimentally unverified even with the theoretical prediction for nearly two decades.

A team from the Jawaharlal Nehru Centre for Advanced Scientific Research (JNCASR) an autonomous institute of the Department of Science and Technology (DST) has experimentally demonstrated that magnetic stress that stems from the peculiar arrangement of atomic spin drives the simultaneous structural, magnetic, and metal-insulator transition.

Figure Caption: Schematic showing a non-spin-polarized to antiferromagnetic spin-polarized transition leads to magnetic stress that drives the structural and electronic phase transition.

The team led by Prof. Bivas Saha has experimentally demonstrated the presence of magnetic stress as a driving force behind the metal-insulator transition in CrN and illuminated pathways for its manipulation.

The magnetic stress within CrN emerges from the interplay between two distinct magnetic orderings along mutually perpendicular directions directly tied to the magnetic exchange interaction between two neighboring Cr atoms. The team employed a technique that involves altering the equilibrium atomic spacing within CrN ultrathin films, to fine-tune the magnetic exchange interactions (epitaxial strain engineering).

When subjected to compressive strain, the magnetic stress increases, resulting in metal-insulator transition at elevated temperatures compared to bulk values. Conversely, when the film is under tensile stress, the magnetic stress diminishes, prompting a metal-insulator transition at a significantly lower temperature than the bulk value.

The structural symmetry also changes from rocksalt at high temperatures to orthorhombic at low temperatures simultaneously. Their observation published in journal Phys. Rev. Lett affirms the pivotal role of magnetic stress in the metal-insulator transition of CrN.

Figure Caption: (b) Temperature-dependent resistivity of relaxed (blue) and strained films shows that compressive stress increases the TN, while tensile stress decreases TN in CrN. (c) The evolution of transition temperature with in-plane strain shows a linear behavior. (d) Schematic description of the changes in magnetic stress in CrN with epitaxial strain. The Txx decreases , and increases in tensile and compressively strained films, respectively. The Tyy behaves conversely to Txx. (e) Temperature-dependent electrical resistivity of 10 nm CrN on STO substrate at two different out-of-plane magnetic fields of 0T and 3T.

“We perceive this as a paradigm shift in the domain of metal-insulator transitions, introducing magnetic stress as a novel driving force alongside the well-established driving forces such as Coulomb repulsion and localization effects. Furthermore, we anticipate this discovery will expand the scope of investigating metal-insulator transition phenomena by identifying new materials with substantial magnetic stress” Prof. Bivas Saha, Associate Professor at the International Centre for Materials Science in JNCASR explained.

Scientists from IISER Thiruvananthapuram, University of Sydney, Australia, Deutsches Elektronen-Synchrotron (DESY), Germany and University of Cambridge, UK also participated in this work.

The new mechanism of metal-insulator phase transition can lead to better understanding on how spin, charge and lattice degrees of freedom are coupled in materials and will also result in new classes of materials that exhibit metal-insulator phase transition.

Publication link: https://doi.org/10.1103/PhysRevLett.131.126302

https://pib.gov.in/PressReleasePage.aspx?PRID=1968030

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NASA Experts were Surprised to See Chandrayaan-3 Technology, Wanted India to Sell it to US: ISRO Chief

During the run-up to the launch of the Chandrayaan-3 mission, a delegation of Nasa scientists, on a visit to the Isro headquarters, was “astonished” to see the sophisticated technologies Indian space scientists have developed “at such low cost” to go to the Moon’s south pole and wanted India to sell them to the US, Isro chairman S Somanath said on Sunday.

Addressing students at an event organised by the Dr A P J Abdul Kalam Foundation in Rameswaram to commemorate the 92nd birth anniversary of the late former President, the Isro chairman said, “About 5-6 people from Nasa’s jet propulsion laboratory came (to the Isro headquarters) and we explained to them the Chandrayaan-3 technology. That was before the soft landing (on August 23). We explained to them about the design, technology and how our engineers made it and how we were going to land on the Moon’s surface... and they just said, ‘We have no comments. Everything is going to be good’. They also said one thing, ‘look at the scientific instruments, they are so beautiful and very cheap, very easy to build and they are high technology. How did you build it? Why don’t you sell this to America’, they were asking.”

The Isro chairman’s statement is significant as the US is currently looking for advanced space technologies at a time when Nasa is working on the Artemis program, which involves a robotic and human exploration to the Moon and which is likely to be launched in 2025.

Somanath said, “Times have changed. We are capable of building the best of equipment, best of devices and best of rockets. Our knowledge and intelligence levels are one of the best in the world. India will be a very powerful nation one day. We will be powerful in technology.”

Recalling the moments on the day India landed on the Moon’s South Pole, Somanath said, “PM Modi called me and thanked me when I told him that ‘India is on the Moon, Sir’.” So, he then asked me, ‘When are you next sending an Indian to the Moon’. “At the launch of Chandrayaan-10, one of you (referring to students in the audience) will design a rocket that will go to the Moon and one amongst you will be sitting inside that rocket and most probably it will be a girl child. A girl astronaut will go from India and land on the Moon... You don’t have to wait till 2047. It will be much before that,” he said.

Referring to his recent participation in a space conference, Somanath said everybody from Nasa and space agencies of Europe and China were congratulating him for the success of the Chandrayaan-3 mission. “Why are they doing it? Because they realise that India is going to be a powerful nation. You must have confidence in it. We must also think that we were once a very powerful nation with so much capacity. And we were drained out due to various reasons.”

Explaining Kalam’s stint in Isro, the Isro chairman said, “I joined Isro in 1985 and I was fortunate to work with Kalam with him but for a short duration as he was leaving Isro to work for DRDO. He struggled in a Rameswaram village to study, he struggled to become an engineer. He failed several times but struggled to become a rocket engineer and succeeded, he then became a missile man (in DRDO) and later the President of India. He was not a scientist but a saint.”

Like Dr Kalam, Somanath said he too had a similar background. “I was brought up in a small village in Kerala. There was no electricity until I studied in school. Like him, I had the fortune to study in a Christian school. I then studied in an engineering college, the only first Muslim

engineering college in Kerala. Throughout my youth, I got love and affection from different types of people and I am thankful to all of them."

After the launch failure of a GSLV rocket, Somanath said, "I was asked to inform Kalam, who was then the President (of India), to explain the reason for the failure. Being a rocket engineer himself, he asked me a lot of questions. But later he said, "Keep trying and you will succeed'. And we succeeded."

Asking students to learn from Kalam teachings, the Isro chairman told students in words of Kalam that "dream big and dream when you are awake. It is that dream that will keep you awake. Dream of going to the Moon and beyond". He said, "Kalam used to say that power is unlimited and everyone of us has to find that power among ourselves."

https://timesofindia.indiatimes.com/india/nasa-experts-were-surprised-to-see-chandrayaan-3-technology-wanted-india-to-sell-it-to-us-isro-chief/articleshow/104470018.cms

THE TIMES OF INDIA

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Assam Youths Develop AI-Driven Traffic Management Platform for Drones

As drones revolutionise military, commercial and other activities, an imperative need for 'traffic management' of these flying objects has emerged with a start-up by two entrepreneurs from Assam providing solutions for it.

Already working with the Indian Air Force for detection and counter-measures of drones, the duo has now come out with an intelligent airspace management platform, which was launched at the 'East Tech 2023', a two-day defence expo which concluded on October 11.

"While most companies are making drones, we are focusing on drone airspace management as it's equally important for sustainable growth of the drone ecosystem. Just like automobiles require road traffic management to run safely and efficiently, the same analogy applies for drone airspace," Manash Bhuyan, Managing Director and Co-founder of AVGARDE, told PTI.

Avgarde Systems Pvt Ltd (AVGARDE), co-founded by Manash Bhuyan and Nilutpal Choudhury in 2018, is a startup incubated at IISc Bangalore, and IIT Guwahati.

It is a radio frequency and wireless technology-focused deeptech start-up building an AI-driven object sensing platform for low-altitude airspace management.

Both founders have relocated from Dubai and Germany respectively to pursue their passions.

It has announced launch of 'DeepSense', a platform addressing complex challenges presented by drones in terms of their operational environment which needs to be managed efficiently and effectively to ensure the safety of aviation, public, operators and other stakeholders.

The platform has various applications across multiple market segments, including airports airspace safety, critical infrastructure protection, drone fleet operations, unmanned traffic management, security monitoring, aerospace and defence, amongst others, they claimed.

Explaining the functioning of the AI-based platform developed by the company, Nilutpal Choudhury, CEO and Co-Founder said, "We have already put in place technologies through which drones can be identified, tackled and their movement inhibited. A 'bird detection and monitoring

radar' (BDMR) is also among our products which can prevent 'bird aircraft strike hazard' (BASH) for airport operators and ensure aviation safety."

"Now, we are integrating our modular solutions with the AI-driven airspace management platform, with the vision of establishing an unmanned traffic management system for the drone airspace," he added.

The company is working with the Indian Air Force as well as oil and gas companies, incorporating feedback and learnings from both military and civilian use cases to further improve their platform.

"As drone technology further develops, we also have to continuously upgrade the platform at our end. The experience of working with the Indian Air Force provides us with critical insights and helps us improve further," Choudhury added.

Bhuyan said that while for the defence sector, the focus is more on anti-drone system, for civilian sectors, protection of critical infrastructure is more vital.

"With the proliferation of drones, there is also a convergence with conventional aviation airspace which needs to be managed effectively to avoid collisions, near-misses, delays and disruptions," he added.

https://timesofindia.indiatimes.com/business/startups/companies/assam-youths-develop-ai-driven-traffic-management-platform-for-drones/articleshow/104459691.cms

THE TIMES OF INDIA

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Data Patterns Enters Tech Partnership with ISRO’s IN-SPACe for Synthetic Aperture Radar Systems

Defence and aerospace electronics solutions provider Data Patterns on Monday said it has entered into a licensing and transfer of technology (ToT) agreement with space nodal agency IN-SPACe for Synthetic Aperture Radar (SAR) development. The partnership helps Data Patterns add capabilities to its radar development efforts and go to market faster with their SAR-based radar systems for aerospace and defence sectors.

SAR-based imaging technology is more efficient and can capture satellite imagery with more accuracy and efficiency. It is fast gaining applications across areas of environmental monitoring, earth-resource mapping and military systems, among others. The technology has been developed at Space Applications Centre (SAC), Isro, and is the forerunner of Isro's upcoming high resolution SAR satellite, the NISAR, and is being available to the larger industry by IN-SPACe via the ToTs.

"This technology will enable SAR radar development by Data Patterns, complementing the large portfolio of radars already available from the company. Data Patterns expects to enhance this technology with its capability with Artificial Intelligence (AI) tools for object detection and classification. This alliance is also a step towards utilising India's space resources better and increasing space-based activities," G Kuppuswamy, vice-president, Data Patterns (India), said.

The ToT agreement was signed by Data Patterns' G Kuppuswamy and IN-SPACe technical director Rajeev Jyoti and NSIL director A Arunachalam.

Data Patterns’ products and solutions include electronic warfare suites, underwater electronics and communication systems and other programmes catering to Tejas Light Combat Aircraft, Light Utility Helicopter, BrahMos and other defence systems.

The company works closely with defence PSUs such as Hindustan Aeronautics and Bharat Electronics as well as government organisations involved in defence and space research like DRDO and Isro. Based out of Siruseri, Data Patterns employs more than 1,000 people.

https://timesofindia.indiatimes.com/business/india-business/data-patterns-enters-tech-partnership-with-isros-in-space-for-synthetic-aperture-radar-systems/articleshow/104467732.cms