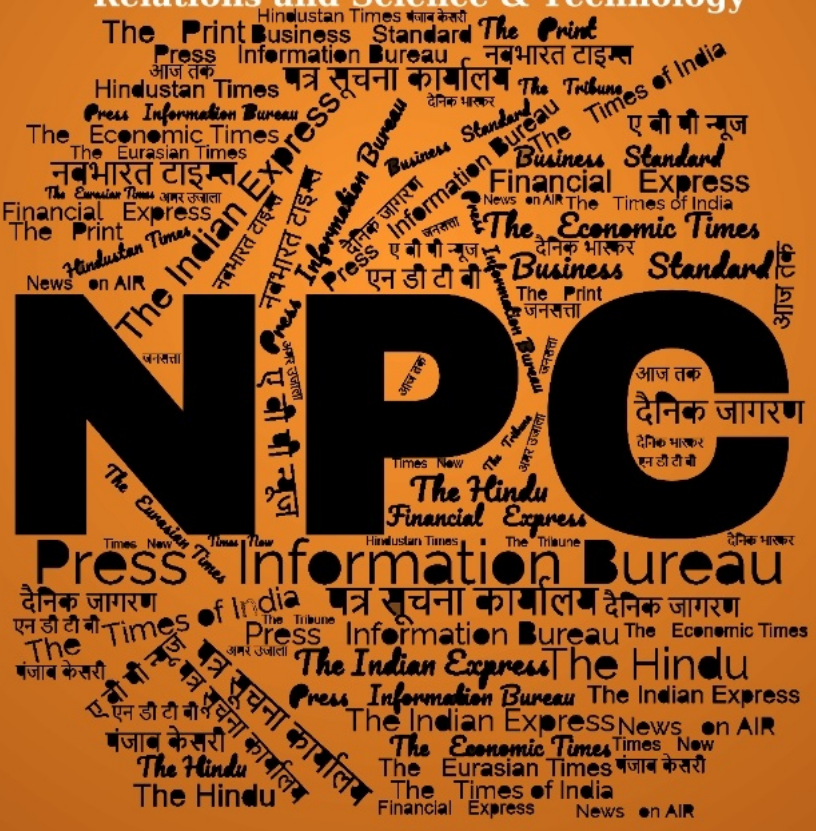
सितम्बर
Sep
2024

खंड/Vol. : 49 अंक/Issue : 179
26 /09/ 2024

समाचार पत्रों से चयनित 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

A Daily service to keep DRDO Fraternity abreast with DRDO Technologies, Defence Technologies, Defence Policies, International Relations and Science & Technology



रक्षा विज्ञान पुस्तकालय
Defence Science Library
रक्षा वैज्ञानिक सूचना एवं प्रलेखन केंद्र
Defence Scientific Information & Documentation Centre
मेटकॉफ हाउस, दिल्ली - 110 054
Metcalfe House, Delhi - 110 054

CONTENTS

DRDO News

पंजाब केसरी

Thu, 26 Sep 2024

DRDO और IIT दिल्ली ने बनाए हल्के वजन वाले बुलेट प्रूफ जैकेट

रक्षा अनुसंधान एवं विकास संगठन (DRDO) ने भारतीय प्रौद्योगिकी संस्थान (IIT) दिल्ली के शोधकर्ताओं के साथ मिलकर एबीएचईडी (एडवांस्ड बैलिस्टिक्स फॉर हाई एनर्जी डिफेट) नामक हल्के वजन की बुलेट प्रूफ जैकेट विकसित की है।

हल्के वजन के बुलेट प्रूफ जैकेट किए विकसित

रक्षा मंत्रालय की प्रेस विज्ञप्ति के अनुसार, "रक्षा अनुसंधान एवं विकास संगठन (DRDO) ने भारतीय प्रौद्योगिकी संस्थान (IIT) दिल्ली के शोधकर्ताओं के साथ मिलकर एबीएचईडी (एडवांस्ड बैलिस्टिक्स फॉर हाई एनर्जी डिफेट) नामक हल्के वजन की बुलेट प्रूफ जैकेट विकसित की है।

उचित मॉडलिंग और सिमुलेशन से किया निर्माण

जैकेट को IIT, दिल्ली में DRDO इंडस्ट्री एकेडेमिया सेंटर ऑफ एक्सीलेंस (DIA-CEO) में विकसित किया गया है।" ये जैकेट पॉलिमर और स्वदेशी बोरॉन कार्बाइड सिरेमिक सामग्री से बनाई गई हैं। डिजाइन विन्यास डीआरडीओ के सहयोग से उचित मॉडलिंग और सिमुलेशन के बाद उच्च तनाव दर पर विभिन्न सामग्रियों के लक्षण वर्णन पर आधारित है।

निर्धारित अधिकतम वजन सीमा से हल्के

विज्ञप्ति में कहा गया है, "जैकेट के लिए कवच प्लेट प्रोटोकॉल के अनुसार सभी आवश्यक अनुसंधान एवं विकास परीक्षणों से गुजर चुके हैं। जैकेट उच्चतम खतरे के स्तर को पूरा करते हैं, और भारतीय सेना के संबंधित जनरल स्टाफ गुणात्मक आवश्यकता में निर्धारित अधिकतम वजन सीमा से हल्के हैं। विभिन्न बीआईएस स्तरों के लिए 8.2 किलोग्राम और 9.5 किलोग्राम के न्यूनतम संभावित वजन के साथ, ये मॉड्यूलर-डिज़ाइन जैकेट आगे और पीछे के कवच के साथ 360 डिग्री सुरक्षा प्रदान करते हैं।" चयन-मानदंड मैट्रिक्स के आधार पर, कुछ भारतीय उद्योगों को प्रौद्योगिकी हस्तांतरण और हैंडहोल्डिंग के लिए चुना गया था।

तीन उद्योगों को प्रौद्योगिकी हस्तांतरित

केंद्र तीन उद्योगों को प्रौद्योगिकी हस्तांतरित करने के लिए तैयार है। विज्ञप्ति के अनुसार, "रक्षा अनुसंधान एवं विकास विभाग के सचिव और डीआरडीओ के अध्यक्ष डॉ समीर वी कामत ने उपलब्धि पर डीआईए-सीओई को बधाई देते हुए कहा कि हल्के वजन वाली बुलेट प्रूफ जैकेट डीआरडीओ, शिक्षाविदों और उद्योग द्वारा सफल रक्षा अनुसंधान एवं विकास के प्रभावी पारिस्थितिकी तंत्र का उदाहरण है।"

रक्षा अनुसंधान एवं विकास के लिए उद्योग और शिक्षा जगत को शामिल करने के लिए 2022 में आईआईटी दिल्ली में डीआरडीओ के संयुक्त उन्नत प्रौद्योगिकी केंद्र को संशोधित करके डीआईए-सीओई का गठन किया गया था। यह डीआरडीओ के वैज्ञानिकों, अकादमिक शोधकर्ताओं और उद्योग भागीदारों को शामिल करते हुए उन्नत प्रौद्योगिकियों पर विभिन्न परियोजनाओं को सक्रिय रूप से आगे बढ़ा रहा है।

https://www.punjabkesari.com/delhi-ncr/bullet-proof-jackets-drdo-and-iit-delhi-developed-lightweight-bullet-proof-jackets/

THE TIMES OF INDIA

Wed, 25 Sep 2024

Lightweight bulletproof jackets with 360-degree protection developed by DRDO, IIT-Delhi

The Defence Research and Development Organisation (DRDO), in collaboration with the Indian Institute of Technology (IIT)-Delhi, has announced the development of lightweight bulletproof jackets, named 'ABHED' (Advanced Ballistics for High Energy Defeat), which meet the highest threat levels. The jackets feature front and rear armours that provide comprehensive 360-degree protection, as stated by the defence ministry on Wednesday.

The jackets feature front and rear armours that provide omprehensive 360-degree protection, as stated by the defence ministry on Wednesday.

Developed at the DRDO Industry Academia Centre of Excellence (DIA-CoE) at IIT-Delhi, the jackets are now ready for technology transfer to three shortlisted Indian industries. The initiative aims to bolster domestic production capabilities in defence equipment. "With a minimum possible weight of 8.2 kg and 9.5 kg for different BIS levels, these modular-design jackets have front and rear armours that provide 360-degree protection," the ministry noted. Made from polymers and indigenous boron carbide ceramic material, the jackets are designed to offer enhanced safety without compromising on mobility.

The jacket's design is the result of rigorous characterisation of materials at high strain rates, followed by advanced modelling and simulation in collaboration with the DRDO. "The armour plates for the jackets have passed all necessary R&D trials as per the protocols. The jackets meet the highest threat levels and are lighter than the maximum weight limits stipulated in the respective General Staff Qualitative Requirement of the Indian Army," the statement added.

Samir V Kamat, secretary of the department of defence R&D and chairman of DRDO, expressed his congratulations to DIA-CoE, stating, "The lightweight bulletproof jacket exemplifies the

effective ecosystem of successful defence R&D by the DRDO, academia, and the industry." The DIA-CoE was established by modifying the Joint Advanced Technology Centre of the DRDO at IIT-Delhi in 2022, aiming to enhance collaboration among industry, academia, and defence research. The centre has been actively pursuing various advanced technology projects, involving DRDO scientists, academic researchers, and industry partners, to support India's defence needs.

https://timesofindia.indiatimes.com/india/drdo-iit-delhi-develop-lightweight-bulletproof-jackets-with-360-degree-protection/articleshow/113671035.cms

INDIA TODAY

Wed, 25 Sep 2024

India to launch long-range missile test to mark 10 years of 'Make in India'

As India marks the 10th anniversary of the "Make in India" initiative, the Defence Research and Development Organisation (DRDO) is gearing up for a major strategic missile test. A Notice to Airmen (NOTAM) has been issued by DRDO for the period between September 25 and September 30, signaling the possibility of a long-range missile launch. The test zone stretches over 1,700 kilometers, suggesting the involvement of a powerful, strategic missile.

India Today had earlier reported DRDO's plan to conduct multiple missile tests during September and October, and this latest announcement aligns with those projections. In recent weeks, DRDO has successfully tested a series of missiles, enhancing India's offensive and defensive missile capabilities.

"This NOTAM points to a highly strategic, long-range missile designed to bolster deterrence. DRDO has ramped up its missile testing program as part of a broader effort to strengthen India’s defence posture," a senior official familiar with the tests told India Today TV.

In recent years, DRDO has made significant strides in developing long-range ballistic and cruise missiles, solidifying India’s status as a regional power with formidable military capabilities. Another source added, "Several missile tests are lined up in the coming weeks, involving variants tailored for different strategic roles. These tests are part of a larger plan to modernise our arsenal and address both current and future security challenges".

Experts note that the timing of this test, coinciding with the 10th anniversary of the Make in India initiative, highlights the country’s commitment to indigenous defence production and technological self-reliance. The missile advancements are seen as vital for maintaining strategic deterrence in a region facing evolving security threats.

Over the past 30 days, DRDO has successfully tested three advanced missile systems as part of its ongoing strategic development program. These tests demonstrate India's efforts to bolster its missile arsenal for both offensive and defensive capabilities.

As the test window approaches, security measures are being implemented to ensure minimal disruption to civilian and commercial activities. Details regarding the missile type and its performance capabilities are expected to be disclosed after the test is successfully completed.

https://www.indiatoday.in/india/story/defence-drdo-to-launch-long-range-missile-test-mark-10-years-of-make-in-india-2606315-2024-09-25

Defence News

Defence Strategic: National/International

Press Information Bureau
Government of India

Ministry of Defence

Thu, 25 Sep 2024

Defence Secretary to visit Kenya to further deepen bilateral defence ties

Defence Secretary Shri Giridhar Aramane will undertake a visit to Kenya from September 26 to 27, 2024 in a significant effort to further deepen defence cooperation. During his visit, the Defence Secretary will hold discussions with the Principal Secretary for Defence of Kenya.

A highlight of the visit would be the foundation stone laying ceremony for a new CT Scan Complex aimed at bolstering the healthcare infrastructure for military personnel in Kenya. The initiative underscores India's commitment to supporting Kenya in advancing its defence readiness and medical services.

https://pib.gov.in/PressReleasePage.aspx?PRID=2058560

THE ECONOMIC TIMES

Wed, 25 Sep 2024

India's defence production hits record Rs 1.27 lakh crore with global exports to over 90 countries

India's defence production hit a record high of Rs 1.27 lakh crore in 2023-24, with the country exporting military hardware to over 90 nations, Defence Minister Rajnath Singh announced on Wednesday. The milestone aligns with the 10th anniversary of the 'Make in India' programme under the NDA government. Started under Prime Minister Narendra Modi, this initiative aimed to achieve self-reliance across various sectors, including defence.

Singh noted, "Ten years since then, many reforms have been made in every sector including the defence sector. India is rising on the defence industrial landscape of the world." In recent years, several measures were taken to promote domestic defence manufacturing, focusing on enhancing military preparedness, particularly along the China border. Defence exports surpassed Rs 21,000 crore for the first time in 2023-24. The ministry targets increasing this to Rs 50,000 crore within five years.

India remains one of the largest arms importers globally. The Indian armed forces are expected to spend about USD 130 billion on capital procurement by 2029. To reduce reliance on imported military platforms, the government supports domestic defence manufacturing. The defence ministry aims for a turnover of USD 25 billion (Rs 1.75 lakh crore) in defence manufacturing within five years. In May 2020, the government raised the FDI limit in the defence sector from 49% to 74% under the automatic route, allowing 100% FDI in specific cases.

https://economictimes.indiatimes.com/news/defence/indias-defence-production-hits-record-rs-1-27-lakh-crore-with-global-exports-to-over-90-countries/articleshow/113661827.cms

THE HINDU

Thu, 26 Sep 2024

As Army awaits new utility helicopters, Cheetah, Cheetal remain lifelines in high altitude areas

While the Army’s efforts to replace the vintage Cheetah and Chetak utility helicopters continues, officials at the Aviation Brigade in Leh explained how they along with the Cheetal as well as the Advanced Light Helicopters (ALH) continue to remain a lifeline for supporting troops in the high altitude areas, including Siachen glacier.

The indigenous Light Utility Helicopter (LUH), manufactured by Hindustan Aeronautics Limited (HAL), meant to replace the Cheetah and Chetak is taking shape but behind schedule, officials said.

“The Army needs 225 LUH and a deal for 110 LUH is currently in the cost negotiation stage,” a defence source stated. Their induction in enough numbers is going to take sometime, another source said.

Lifeline in high altitude

Officers and technicians at the Army Aviation Brigade in Leh, which operates ALH, Cheetals and Unmanned Aerial vehicles, explained how these helicopters are a lifeline in supplying logistics, casualty evacuation among other roles in the forward most areas of Ladakh. The Cheetal is an upgraded version of the Cheetah, featuring the same engine as the ALH MK1 and Mk2, explained Maj. Ayush Devliyal from the Corps of Electronics and Mechanical Engineers (EME). The Cheetal holds the record for landing at an altitude of 23,000 feet.

Since the May 2020 standoff with China in Eastern Ladakh, which is still underway, the Army has carried a major reorientation of troops towards the Line of Actual Control (LAC) and several thousand troops were inducted into the area which meant extending the logistics and supply chains, both by road and through the air to support them.

Army Aviation too has upped its tempo of operations to cater to the requirements of troops support, surveillance and being ready for operations if needed. Giving a sense of their tasks, Col. Randeep Pathania, Commanding Officer of the ALH squadron, noted how varied the terrain is. We have icy heights of glacier, we have heights but dry deserts of Eastern Ladakh, we have hilly terrain or high mountains of Western Ladakh which is Drass and Kargil, he noted.

“Each sector we have fragmented here is unique and definitely a very challenging and difficult terrain, he said speaking to a few visiting journalists last weekend. We need to understand the machine and all aspects related to the machine so that we can undertake flying here. The tasks here are very essential.”

The entire aim is to have synergy between, not only with other aviation assets, but also with ground formations, observed Lt. Col. Amit Ansal also from EME. “The Aviation squadron regularly practices with various formations so that one plan can come out and the role is understood by one and all during operations.”

Highlighting an important aspect, Brig. Gurdeep Singh commanding the Aviation Brigade said the civil administration also requisitions them for number of tasks. The recently concluded Lok Sabha elections, there are some areas which even in summers are cut off, so induction of polling officials along with Electronic Voting Machines (EVM), we did that, he said. “Number of posts in Zanskar area, where we flew almost 80 hours utilising a number of helicopters for inducting polling officials, security officials and EVMs and de-inducting them.”

Army Aviation has three Brigades at Leh, Missamari and Jodhpur operating around 190 Cheetah, Chetak and Cheetal helicopters, 145 ALH, 75 of which are the Rudra weaponised variants and 25 ALH Mk-III on order in addition to the Light Combat Helicopter under induction. Of the 190 Cheetah, Chetaks, and Cheetals in service, around 134 helicopters or over 70% of them are over 30 years old, as reported by The Hindu earlier.

https://www.thehindu.com/news/national/as-army-awaits-new-utility-helicopters-cheetah-cheetal-remain-lifelines-in-high-altitude-areas/article68683203.ece

THE ECONOMIC TIMES

Wed, 25 Sep 2024

China test-fires an intercontinental ballistic missile into the Pacific Ocean

China test-fired an intercontinental ballistic missile into the Pacific Ocean on Wednesday, stirring security concerns in the region already tense over Beijing's territorial claims and rivalry with the U.S. The ICBM carried a dummy warhead and fell into a designated area of the sea, the Defense Ministry said in a statement posted to social media. The launch by the People's Liberation Army's Rocket Force was part of routine annual training, complied with international law and was not directed against any country or target, according to the statement.

It is unclear how often China conducts tests over such a distance. In 1980, China launched an ICBM into the South Pacific.

A map published in Chinese newspapers at the time showed the target area as roughly a circle in the center of a ring formed by the Solomon Islands, Nauru, the Gilbert Islands, Tuvalu, western Samoa, Fiji and the New Hebrides. The U.S. and non-governmental organizations have said China has been building up its missile silos, but it's unclear how many missiles and nuclear warheads it has added to its arsenal.

The People's Liberation Army, which functions as the ruling Communist Party's military wing, runs China's space program, which has established an orbital station and has ambitions to set up a Moon base and land a spacecraft on Mars. Rocketry has long been part of China's development into a major global power, spurring nationalism and growth that has made China the world's secondlargest economy.

The U.S. remains China's main global rival, although Japan, Taiwan, the Philippines and others have territorial disputes with Beijing that occasionally threaten to develop into military clashes. China maintains a "no first use" of nuclear weapons policy, even as its desire for regional predominance grows.

Tests of China's intercontinental ballistic missiles into international waters are rare. Experts and a historical survey of China's program by the Washington-based Nuclear Threat Initiative suggest the last occurred in May 1980. That test saw China launch its DF-5 missile into the South Pacific. China typically launches missiles toward its western deserts from its east coast, said James Acton, the co-director of the Nuclear Policy Program and a senior fellow at the Carnegie Endowment for International Peace. The fact that China launched a test that splashed down in international waters was unusual, but mirrors testing that the United States does for its own ballistic missile fleet.

"When they haven't done something for 44 years and then they do it, that's significant," Acton told The Associated Press. "It's China's way of telling us, 'Like you, we're not ashamed we have nuclear weapons and we're going to behave like a great nuclear power.'"

The launch came amid the ongoing United Nations General Assembly in New York. China is one of five veto-holding permanent members of the U.N.'s Security Council and has sought to gain influence over its key departments involving human rights and that align with its authoritarian system.

A series of corruption arrests this year ensnared several leading officers in the Rocket Force, alongside the detentions of two previous defense ministers amid allegations of misconduct. A test launch now could both provide assurances to China's population amid an economic downtown and a signal to the world that the party remains firmly in control and is determined to rise to global prominence.

"We're entering a new age. We're entering an age where the U.S. and China are engulfed in what feel like an arms race," said Jeffrey Lewis, a missile expert at the James Martin Center for Nonproliferation Studies at the Middlebury Institute of International Studies in the U.S.

"The Chinese government always prioritized diplomatic issues over operational readiness. It's just a different China. It's a China that does not feel constrained," he said. "There's a renewed emphasis on assuring themselves these systems work and demonstrating to others they work," Lewis added.

Meanwhile, tensions remain high over Taiwan, and with the Philippines, where the U.S. Army has deployed its new mid-range missile system, known as Typhon, to Northern Luzon. On Wednesday, two Filipino officials said the U.S. and the Philippines have agreed to keep the system there indefinitely to deter China.

"I don't know what's the plan, but if I were to be followed, if I were given the choice, I would like to have the Typhon here in the Philippines forever because we need it for our defense," said Gen. Romeo Brawner Jr., the head of the Philippines' military.

Defense officials in Japan and Taiwan declined to comment directly on the Chinese announcement. Both, along with South Korea, maintain robust defenses against Chinese moves, including early warning systems and air raid shelters.

https://economictimes.indiatimes.com/news/defence/china-test-fires-an-intercontinental-ballistic-missile-into-the-pacific-ocean/articleshow/113668213.cms

THE ECONOMIC TIMES

Wed, 25 Sep 2024

Mumbai-based company partners with Boeing for production of advanced sea drones in India

Indian defence company Sagar Defence Engineering has partnered with Boeing's Liquid Robotics for the co-development and co-production of uncrewed surface vehicle (USV) systems. This partnership is part of a broader defence industrial cooperation roadmap between India and the US.

The collaboration aims to enhance undersea domain awareness and maritime security for the Indian Navy, the US, and their global partners. The joint effort will focus on developing and mass-producing USV systems, which are expected to be ready by 2025.

Nikunj Parashar, co-founder of Sagar Defence, highlighted the significance of this partnership, stating, "Our co-development and co-production partnership is a testament to the capabilities of Indian defence firms manufacturing and delivering at global benchmarks. This also underscores both partners' efforts to help bolster India's vision of Aatmanirbharta (self-reliance) in defence, while advancing regional and global maritime security."

Salil Gupte, president of Boeing India and South Asia, emphasized Boeing's commitment to supporting India's self-reliance in defence, remarking, "This co-development and co-production of scaled USV systems with an Indian partner truly demonstrates our commitment and ability to help realise the government's vision for an Aatmanirbhar Bharat in defence. Boeing continues to lead the way in having built local capabilities across manufacturing, design, engineering and skilling in India with Indian partners over decades — and that foundation positions us strongly for more such initiatives in the future."

Shane Goodenough, CEO of Liquid Robotics, also expressed his enthusiasm for the partnership, saying, "Wave Glider is an ideal system for fostering collaboration between the US and Indian govts and strengthening tactical readiness in the Indo-Pacific. Teaming up with Sagar Defence marks a new era for our bilateral defense cooperation and enables us to grow our existing Wave Glider operations in India. We are very pleased to join forces with the skilled team at Sagar, who has a proven record of successfully integrating uncrewed systems into active defense missions."

Sagar Defence is known for providing uncrewed surface vehicles to the Indian Navy and has expertise in vehicle control systems, sensor integration, and unmanned system manufacturing.

https://economictimes.indiatimes.com/news/defence/mumbai-based-company-partners-with-boeing-for-production-of-advanced-sea-drones-in-india/articleshow/113656730.cms

FINANCIAL EXPRESS
Read to Lead

Wed, 25 Sep 2024

Indian Army’s Decade of Transformation: Modernisation, Sustainability, and Infrastructure Growth

Over the next decade, the Indian Army is setting a course for a major transformation, focusing on enhancing its operational capabilities and embracing new technologies. As part of this vision, the Army is investing heavily in modernising its equipment, ensuring the longevity of its assets, and building critical infrastructure.

These efforts are being driven by a commitment to self-reliance, in line with the national policy of Aatmanirbharta. Through strategic financial reforms, digital innovation, and a push for domestic

production, the Army aims to strengthen its operational readiness while minimizing reliance on foreign imports.

Building a Self-Reliant Defence Ecosystem

A significant portion of the Army's capital budget has been directed toward acquiring cutting-edge technology domestically. As per official sources, the Army has established partnerships with Defence Public Sector Undertakings (DPSUs), private industries, and start-ups to boost innovation in defence production. This shift has dramatically reduced foreign procurements, furthering India's vision of self-reliance in defence. The efforts have already begun to show results, with India's defence ecosystem gaining strength year by year.

The Government-e-Marketplace (GeM), introduced under GFR 2017, has emerged as a vital tool for streamlining the procurement process. The Indian Army has rapidly adopted GeM, increasing its procurement from Rs 21 Cr in 2017 to over Rs 15,433 Cr in FY 2023-24. According to sources, this digital procurement shift has enhanced transparency and price discovery, ensuring that military purchases meet both efficiency and budgetary standards.

Sustaining and Enhancing Operational Readiness

In addition to acquiring new technology, the Army remains focused on sustaining its existing equipment. The capital expenditure program has allocated substantial funds for upgrading, maintaining, and refurbishing assets to ensure their long-term effectiveness. Commanders have been empowered with delegated procurement powers through Operation Capital Procurement Powers (OCPP), allowing them to address field needs swiftly. According to military officials, this shift is aimed at improving operational readiness by ensuring timely procurement and resource allocation.

The introduction of the Command Budget Management (CBM) system has also played a crucial role. The CBM system enables field commanders to flexibly allocate resources based on immediate operational demands. This financial empowerment has significantly enhanced the Army's ability to prioritize funding for crucial areas such as technology absorption and research, ensuring a future-ready force.

Infrastructure Expansion for Operational Efficiency

Sources indicate that a major focus of the Indian Army's capital expenditure has been the expansion and modernization of infrastructure. By identifying and addressing key bottlenecks, the Army has laid the groundwork for the development of new operational and administrative facilities. These upgrades are expected to improve the efficiency of military operations, ensuring that the Army is well-prepared to meet future challenges.

Advancing Financial Automation and Transparency

The Indian Army has also adopted financial automation to streamline budgeting and enhance transparency. According to reports, the Indian Army Financial Information System (IAFIS) is set to fully integrate financial operations by partnering with platforms like the Public Financial Management System (PFMS) and GeM. This initiative, along with the widespread use of

competitive bidding (accounting for 80% of procurement), has led to significant savings for the state exchequer and improved transparency in defence expenditure.

https://www.financialexpress.com/business/defence-indian-armys-decade-of-transformation-modernisation-sustainability-and-infrastructure-growth-3621215/

Science & Technology News

Press Information Bureau
Government of India

Ministry of Science & Technology

Wed, 25 Sep 2024

CSIR-NIScPR Signs MoU with Gurugram University to Collaborate and Serve Society through Science

CSIR-National Institute of Science Communication and Policy Research (CSIR-NIScPR) signed an MoU with the Gurugram University on 24th September 2024 at the NIScPR's Vigyan Sanchar Bhawan, Pusa Campus, New Delhi.

This MoU will open up new windows for the both the institutions in the service of society. The key areas of this memorandum of understanding are science communication, STI policy research, traditional knowledge and many more. On the occasion of this MoU signing, the Director of CSIR-NIScPR and Vice Chancellor of Gurugram University shared their views about the significance and need of this MoU.

Shri Rajesh Kumar Singh Roushan, Controller of Administration, CSIR-NIScPR and Dr. Rajiv Kumar, Registrar, Gurugram University signed and exchanged the MoU.

Dr. Sarala Balachandran, Chairperson, Department of Chemistry; Dr. Dwivedi, Head, Nursing; and Dr. Rakesh Yogi, Chairperson, Media Studies, Gurugram University also joined the program. CSIR-NIScPR has seven decades legacy of science communication and science policy research.

On 13th-14th November 2024, CSIR-NIScPR in collaboration with Gurugram University is going to organise an International Conference on Communication and Dissemination of Traditional Knowledge (CDTK-2024). Last date for early bird registration for CDTK-2024 is 30thSeptember 2024.

https://pib.gov.in/PressReleasePage.aspx?PRID=2058653

Press Information Bureau
Government of India

Ministry of Science & Technology

Wed, 25 Sep 2024

Astronomers map the Differential Rotation of the Sun's Chromosphere using 100 Years of Kodaikanal Data

Using 100 years daily records of the Sun at the Kodaikanal Solar Observatory, astronomers have succeeded in mapping, for the very first time, the variation in the rotation speed of the Sun's chromosphere, from the equator right up to its polar regions. The research can help give a complete picture of the Sun's inner workings.

Earth spins like a rigid ball, completing a full rotation every 24 hours. This rotation is the same everywhere on Earth, from bustling Bangalore to the icy plains of Antarctica. The Sun, however, has a completely different story to tell. Being a giant ball of plasma, different parts of the Sun rotate at different speeds, depending on their latitude. It has been known for a long time that the Sun's equator spins much faster than its poles.

It takes the equatorial region only about 25 days to complete one rotation, while the poles take a leisurely 35 days. This difference in rotation speed is called differential rotation. Understanding the intricacies of the variation in rotation speed, as a function of latitude as well as time, is crucial to understand the Sun itself. This is because the interaction of differential rotation with the Sun's magnetic field is what is behind the solar dynamo, the 11-year solar cycle, and its periods of intense activity that even produce magnetic storms on Earth.

The discovery of differential rotation dates back to Carrington in the 19th century, who observed that sunspots on the visible surface of the Sun rotated at different speeds depending on their latitude.

However, sunspots do not appear at latitudes higher than about 35 degrees north or south of the solar equator, and other methods had to be used to measure differential rotation closer to the polar latitudes. These either relied on spectrographs which are not easy to use for this particular purpose, or had to wait for those rare sunspots that occurred occasionally at higher latitudes. These methods are unsuited to confirm reports how the differential rotation itself varies with time over a solar cycle, etc.

Astronomers from the Indian Institute of Astrophysics (IIA), an autonomous institute of DST, used solar plages and networks from daily records of the Sun stretching over 100 years, maintained by the Kodaikanal Solar Observatory, operated by the Indian Institute of Astrophysics. The observatory celebrates its 125th anniversary this year.

"The Kodaikanal Solar Observatory is just one of two such places in the entire world with such long-term data", said Muthu Priyal, a co-author of the study, working at IIA. "We hit on the idea of using solar plages and networks to measure rotation speeds. Images captured at the specific

wavelength of 393.3 nanometers (due to the Calcium K spectral line) showcase the lower and middle chromosphere and display prominent features like plages (bright regions) and network cells (convective structures)", she added.

Plages, unlike sunspots, are brighter regions with weaker magnetic fields. They reside in the chromosphere, and are significantly larger than sunspots, ranging from 3 to 10 times the size of sunspots.

Network features, on the other hand, are embedded with weaker magnetic fields and are about 30,000 km across – slightly larger than individual sunspots but smaller than sunspot groups. Unlike sunspots, both plages and networks are continuously present across the Sun's surface throughout the solar cycle, allowing the scientists to probe the rotation rate even at the poles.

The Observatory had meticulously documented the chromosphere using photographic plates and films and this invaluable data has recently been digitized using a large-format CCD camera, making it accessible to researchers worldwide.

"We decided to use this treasure trove of information and meticulously extracted data on plages and network features from the images. These features were then categorized based on their location within 10-degree latitude bands across both the Sun's northern and southern hemispheres", said Prof Jagdev Singh of IIA, and a co-author of the paper.

By analyzing this data, the team was able to extract the rotation period of these features at various latitudes. This revealed a clear picture of the Sun's differential rotation – faster at the equator (13.98 degrees per day) and slower towards the poles (10.5 degrees per day at 80 degrees latitude). Intriguingly, both plages and network features displayed remarkably similar rotation rates. This suggests a potential shared origin of both plages and networks, possibly rooted deep within the Sun's interior below the photosphere (the visible surface).

Said Prof. B. Ravindra of IIA, "This work signifies the first-time scientists have successfully utilized chromospheric network cells to map the Sun's rotation from equator to pole. Understanding the Sun's differential rotation is crucial for comprehending its magnetic field and activity. This research using chromospheric features paves the way for a more complete picture of the Sun's inner workings".

This paper was published in the Astrophysical Journal, titled "Equator to Pole Solar Chromospheric Differential Rotation Using Ca-K Features Derived from Kodaikanal Data", and was authored by Kharayat, Hema (Indian Institute of Astrophysics and M.L.K.P.G. College, Balrampur) and Singh, Jagdev, Priyal, Muthu and Ravindra, B. from Indian Institute of Astrophysics.

https://pib.gov.in/PressReleasePage.aspx?PRID=2058531

THE ECONOMIC TIMES

Wed, 25 Sep 2024

Indian-origin techie develops AI that not only captures every moment of your life but also tells you what to focus on

Advait Paliwal, an Indian-origin entrepreneur, has launched a new wearable device named Iris, promising users "infinite memory" of their life. The announcement was made through a social media post, highlighting the device's unique capabilities.

Iris is designed to capture photographs every minute and stores them on the device or uploads them to the cloud. This aims to document daily moments and identify patterns that might go unnoticed. The wearable also uses AI to organize and caption these images, creating a detailed timeline. Paliwal stated that the device can assist users in remembering forgotten details.

“Iris also has a focus mode. It notices when you get distracted and proactively tells you to get back on track,” Paliwal mentioned in his blog post. The device’s design is inspired by the evil eye symbol. Paliwal worked on it at Augmentation Lab in Cambridge, a hacker accelerator program for AI and hardware. His presentation of Iris at the MIT Media Lab was well-received by over 250 attendees.

Paliwal emphasized the potential benefits of Iris, including aiding doctors in understanding patient habits, ensuring workplace safety, and assisting in elderly care without being intrusive. However, he acknowledged the device might raise privacy concerns.

“There are good and bad sides to this. On one hand, Iris could really help people with memory problems or help us stay focused on our goals. But it also raises concerns about privacy and how these recordings might be used,” Paliwal wrote.

Despite the potential privacy issues, Paliwal believes it is ultimately up to users to decide how to use the device. He referenced past attempts at similar technology, such as Google Clips, which faced detection challenges and was eventually discontinued. One commenter on X expressed discomfort with constant photo-taking, to which Paliwal replied, “people are constantly taking mental photos anyway.”

https://economictimes.indiatimes.com/news/science/indian-origin-techie-develops-ai-that-not-only-captures-every-moment-of-your-life-but-also-tells-what-to-focus-on/articleshow/113652167.cms

© The news items are selected by Defence Science Library, DESIDOC from Print Newspapers and Authentic Online News Resources (mainly on DRDO, Defence and S&T)