September 2022

समाचार पत्रों से चयित अंश
Newspapers Clippings

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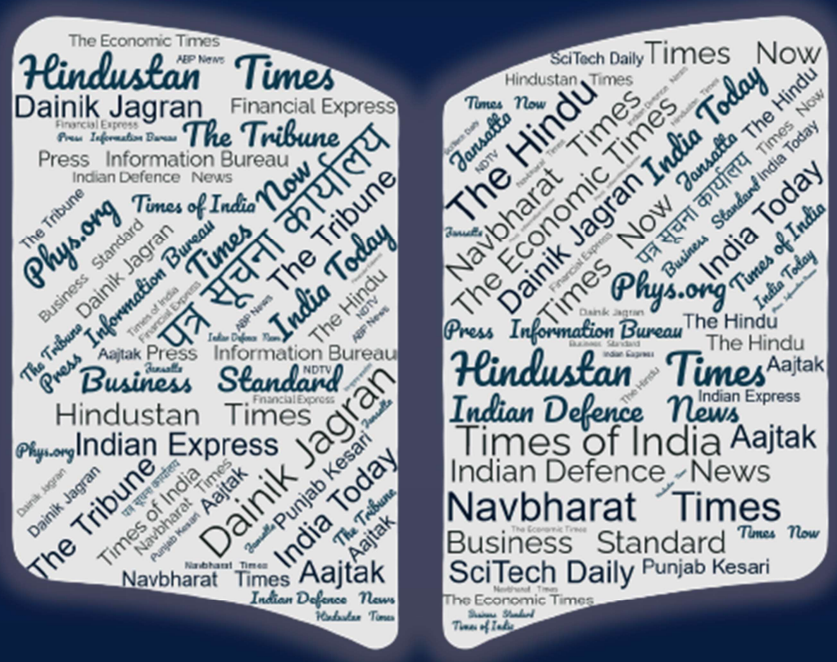

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THE HINDU

Wed, 28 Sept 2022

Visakhapatnam: Think Innovatively, Scientific Adviser Urges Andhra University Students

Scientific Adviser to Defence Minister G. Satheesh Reddy urged the young minds at Andhra University to think innovatively as innovation was the future. “We must work in advance frontier technology and come out with cutting-edge ideas and technology, as we have to think ahead of other countries and work on tomorrow’s technology,” he said.

Scientific Adviser to Defence Minister G. Satheesh Reddy speaking to students of Andhra University in Visakhapatnam on Wednesday. Vice-Chancellor P.V.G.D. Prasad Reddy is seen

He was delivering a lecture on ‘Atmanirbhar Bharat- the need, metamorphosis and the way forward’ to the students and faculty members of Andhra University here on Wednesday. He pointed out that India was going through a transformation in multiple areas and things are changing fast. “Earlier, 80% of the engineers, especially from the IITs, were going abroad. But now more than 75% are staying back, as we have the ecosystem to support the scientific temper of the young engineers and scientists,” he said. He said that work is going on fast-track in various sectors related to the defence such as stealth technology, composite material, green engines, propulsion, artificial intelligence, robotics and cyber warfare.

‘Over 75,000 startups’

Mr. Reddy said that the Union Government was in the mood to support startups in a big way. “In 2016, there were only 471 startups, but today we have over 75,000 startups working in various areas. This is a quantum jump, we are encouraging more numbers. The Defence Ministry is

supporting about 60 startups and we are ready to fund to the tune of ₹10 to ₹50 crore, if the idea, concept and design are good," he said. He also informed the gathering that DRDO has tie-ups with about 400 colleges and is encouraging the setting up of incubation centres. "We have also allocated a budget of about ₹1,100 crore," he said. "From being a major importer of defence material, today we are among the exporters, with our indigenous products earning a good reputation and finding a market,"he said.

Talking about Tejas Light Combat Aircraft, he said that the aircraft is doing well and shortly another 83 will be inducted into the Indian Air Force to the existing fleet of 40, to take the tally to 143 aircraft. He also said that the development of Tejas Mark-II is in the advanced stage and work is on a fast-track for the HAL's Advanced Medium Combat Aircraft (AMCA). Mr. Reddy also highlighted the success of other indigenously-built war machines such as the main battle tank (MBT) Arjun and 155mm artillery guns. "These guns were showcased on Independence Day and they have the longest range in the world. Our Mission Shakti, was also a success and today we have a missile cruising at 11 km per second that can knock off a satellite in orbit," he said. Even, the commissioning of INS Vikrant, talks about our self-reliance and most importantly, the steel used to build the ship was produced indigenously, he added. Earlier, AU Vice-Chancellor P.V.G.D. Prasad Reddy spoke about harnessing the demographic dividend.

https://www.thehindu.com/news/cities/Visakhapatnam/visakhapatnam-think-innovatively-scientific-adviser-urges-andhra-university-students/article65946707.ece?homepage=true

THE HINDU

Wed, 28 Sept 2022

Electric Vehicles will Play a Major Role in Driving the Nation's Economy, Says Scientific Adviser G. Satheesh Reddy

Electrochemical energy conversion and storage have become important contributors to economy and electric vehicles (EVs) will play a major role in driving the nation's economy in view of their large volumes of consumption, Scientific Adviser to the Defence Minister G. Satheesh Reddy has said. He was speaking as the chief guest at the inaugural of a two-day national seminar on "Electrochemical Energy Conversion and Storage-2022", which began at the Naval Science and Technological Laboratory (NSTL) here on Wednesday. The second major consumption of batteries would be drones, as a vast majority of them use battery power. In the last one decade. enormous changes have come in battery technology with their size becoming smaller and duration going up. He said that the government was thinking of advanced batteries in India. Mr. Reddy said that Niti Aayog has recommended the use of battery technologies for both defence and civilian applications.

The Indian Space Research Organisation (ISRO) and Defence Research and Development Organisation (DRDO) were already developing batteries for use in satellite launch vehicles, missiles and torpedoes, which have short life. They were now in the process of developing batteries for long duration use. He said that core technologies have to be made in the country at an affordable cost. Lithium-ion technology has emerged in a big way in the world and India was

still trying to catch up. He underlined the importance of material research to find out the availability of materials like cathode, anode and electrolytes, which go into the making of batteries. This should be done even before battery management technologies were developed. Similarly, viability and manufacturing capability were also important. On the need to continue research, Mr. Reddy said that a lot of work was being done on sodium (Na) ion, magnesium ion and Li sulphur as alternatives to Li ion. Referring to the theme of the conference, he said that this was one of the technologies for India to become 'Atma Nirbhar Bharat' (self-reliant India). He hoped that the conference comes out with clear-cut strategies to achieve the dream of the Prime Minister.

Director General of Naval Systems and Materials(NS&M) Bh.V.S. Narayana Murthy spoke on the role of high energy batteries in the development of missiles, torpedoes and underwater vehicles.

Vijayamohan K. Pillai of IISER, Tirupati, gave the keynote address on "Imminent EV revolution in India – Problems and Challenges."

NSTL Director Y. Sreenivas Rao and Technology Director A. Srinivasa Kumar spoke.

Earlier, T.V.S.L. Satyavani, Scientist-F, welcomed the gathering.

Director General Naval Armaments from Integrated Headquarters (Navy), New Delhi K.S.C. Iyer, Senior Scientists P.V.S. Ganesh Kumar, B.V.S.S. Krishna Kumar, Manu Korulla, R. Srihari and Abraham Varghese were present.

https://www.thehindu.com/news/cities/Visakhapatnam/electric-vehicles-will-play-a-major-role-in-driving-the-nations-economy-says-scientific-adviser-g-satheesh-reddy/article65946517.ece

Defence News

Defence Strategic : National/International

पत्र सूचना कार्यालय
भारत सरकार

रक्षा मंत्रालय

बुधवार,28 सितंबर 2022 6:37 अपराह्न

सरकार ने लेफ्टिनेंट जनरल अनिल चौहान (सेवानिवृत्त) को चीफ ऑफ डिफेंस स्टाफ (सीडीएस) नियुक्त किया

सरकार ने लेफ्टिनेंट जनरल अनिल चौहान (सेवानिवृत्त) पीवीएसएम, यूवाईएसएम, एवीएसएम, एसएम, वीएसएम को अगले चीफ ऑफ डिफेंस स्टाफ (सीडीएस) के रूप में नियुक्त करने का निर्णय लिया है, जो उनके कार्यभार ग्रहण करने की तिथि और अगले आदेश तक भारत सरकार के सैन्य मामलों से जुड़े विभाग के सचिव के रूप में

भी कार्य करेंगे। लगभग 40 वर्षों से अधिक के करियर में, लेफ्टिनेंट जनरल अनिल चौहान अनेक कमांड, स्टाफ और सहायक पदों पर रहे हैं और जम्मू-कश्मीर तथा उत्तर-पूर्व भारत में आतंकवाद विरोधी अभियानों में भी उन्हें व्यापक अनुभव रहा है।

18 मई 1961 को जन्मे लेफ्टिनेंट जनरल अनिल चौहान को 1981 में भारतीय सेना की 11 गोरखा राइफल्स में कमीशन प्रदान किया गया था। वह राष्ट्रीय रक्षा अकादमी, खडकवासला और भारतीय सैन्य अकादमी, देहरादून के पूर्व छात्र हैं। मेजर जनरल के रैंक में उन्होंने उत्तरी कमान में महत्वपूर्ण बारामुला सेक्टर में एक इन्फैंट्री डिवीजन की कमान संभाली थी। बाद में लेफ्टिनेंट जनरल के रूप में, उन्होंने उत्तर-पूर्व में एक कोर की कमान संभाली और बाद में सितंबर 2019 से पूर्वी कमान के जनरल ऑफिसर कमांडिंग-इन-चीफ बने तथा मई 2021 में सेवा से अपनी सेवानिवृत्ति तक पदभार संभाला।

इन कमांड नियुक्तियों के अलावा वह महानिदेशक, मिलिट्री ऑपरेशन्स के प्रभार समेत महत्वपूर्ण स्टाफ नियुक्तियों पर भी रहे। इससे पहले उन्होंने अंगोला में संयुक्त राष्ट्र मिशन के रूप में भी काम किया। वह 31 मई 2021 को भारतीय सेना से सेवानिवृत्त हुए। सेना से सेवानिवृत्त होने के बाद भी, उन्होंने राष्ट्रीय सुरक्षा और रणनीतिक मामलों में योगदान देना जारी रखा। सेना में विशिष्ट और शानदार सेवा के लिए लेफ्टिनेंट जनरल अनिल चौहान (सेवानिवृत्त) को परम विशिष्ट सेवा पदक, उत्तम युद्ध सेवा पदक, अति विशिष्ट सेवा पदक, सेना पदक और विशिष्ट सेवा पदक से सम्मानित किया गया।

https://pib.gov.in/PressReleasePage.aspx?PRID=1863137

Press Information Bureau
Government of India

Ministry of Defence

Wed, 28 Sept 2022 6:37 PM

Government Appoints Lt General Anil Chauhan (Retired) as Chief of Defence Staff (CDS)

The Government has decided to appoint Lt General Anil Chauhan (Retired) PVSM, UYSM, AVSM, SM, VSM as the next Chief of Defence Staff (CDS) who shall also function as Secretary to Government of India, Department of Military Affairs with effect from the date of his assumption of charge and until further orders. In a career spanning over nearly 40 years, Lt Gen Anil Chauhan had held several command, staff and instrumental appointments and had extensive experience in counter-insurgency operations in Jammu & Kashmir and North-East India.

Born on 18th May 1961, Lt Gen Anil Chauhan was commissioned into the 11 Gorkha Rifles of the Indian Army in 1981. He is an alumnus of the National Defence Academy, Khadakwasla and Indian Military Academy, Dehradun. In the rank of Maj General, the officer had commanded an Infantry Division in the critical Baramula sector in the Northern Command. Later as Lt General, he commanded a corps in the North East and subsequently went to become the General Officer Commanding-in-Chief of the Eastern Command from September 2019 and held the charge until his retirement from the service in May 2021.

In addition to these command appointments, the officer also tenanted important staff appointments including the charge of Director General of Military Operations. Earlier, the officer had also served as a United Nations mission to Angola. The officer superannuated from the Indian Army on 31 May 2021. Even after his retirement from the Army, he continued to contribute to national security and strategic matters. For his distinguished and illustrious service in the Army, Lt General Anil Chauhan (Retired) was awarded the Param Vishisht Seva Medal, Uttam Yudh Seva Medal, Ati Vishisht Seva Medal, Sena Medal and Vishisht Seva Medal.

https://pib.gov.in/PressReleasePage.aspx?PRID=1863084

Outlook

Wed, 28 Sept 2022

Who Is Anil Chauhan, The New Chief of Defence Staff?

After nine months of the unfortunate death of General Bipin Rawat, the Government has decided to appoint Lt. General Anil Chauhan (retd.) as the next Chief of Defence Staff (CDS). The defence ministry in its statement said, "The Government has decided to appoint Lt General Anil Chauhan (Retired) as the next Chief of Defence Staff (CDS) who shall also function as Secretary to Government of India, Department of Military Affairs with effect from the date of his assumption of charge and until further orders. But who is Lt. General Anil Chauhan? What are the major responsibilities he took over during his tenure? Let us have a quick look at his journey.

Early Career of the Lieutenant

As an alumnus of National Defence Academy (NDA), Khadakwasla and Indian Millitary Academy, Dehradun, Chauhan was commissioned into Gorkha Rifles in 1981. Belonging to a Rajput family in Gharwal, he is also known as Eastern Army commander for spending major part of his tenure in this region. Eastern Army is considered as an equivalent to Northern Army in terms of its strategic influence.

Newly Recruited CDS Anil Chauhan

During his tenure as Major General (2014-2016), he commanded over the infantry division at the critical Baramulla Sector in Northern Command. He became Commander-in-Chief of Eastern Command in 2019 and stayed at the position until his retirement in May, 2021. It was only in his tenure that the insurgency situation in the north-east was improved leading to the reduced military foot print in the area. During the India-China border crisis, his stewardship was as vivid as notable. As Director General Military Operations Lt. Gen Anil Chauhan led the Operation

Sunrise where both Indian and Myanmar army took joint efforts to diminish insurgency in the border area in 2019. The two phased operation was divided in February and May. The targeted groups of the operation were NSCN(K), ULFA, NDFB and PLA, as well as anti-Myanmar entities including in Arakan and other insurgents in China-Mizoram borders. He was also reportedly a part of the strategic planning of Balakot surgical strike and took the responsibilities of managing security at the border during the post-strike escalation of tensions.

Awards and Recognitions

The colourful career of Lt General Chauhan was rightly recognized by the Central Government in different times. For his relentless service to the country, he was awarded with Param Vishisht Seva Medal, Uttam Yudh Seva Medal, Ati Vishisht Seva Medal, Sena Medal, and Vishisht Seva Medal. Anil Chauhan is going to be the second CDS of India since the Modi Government approved the post in 2019.

https://www.outlookindia.com/national/who-is-anil-chauhan-the-new-chief-of-defence-staff--news-226519

Press Information Bureau
Government of India

Ministry of Defence

Wed, 28 Sept 2022 7:7 PM

Raksha Mantri Visits Army Formation in Dinjan, Assam; Reviews Operational Readiness along LAC

Shri Rajnath Singh to visit forward posts in Arunachal Pradesh tomorrow for on-ground assessment of defence preparedness

Raksha Mantri Shri Rajnath Singh visited Army Formation in Dinjan, Assam on September 28, 2022. The Raksha Mantri is on a three-day visit to Assam and Arunachal Pradesh till September 30, 2022, wherein he is scheduled to visit the frontline locations. He is accompanied by Chief of the Army Staff General Manoj Pande and General Officer Commanding-in-Chief, Eastern Command Lieutenant General RP Kalita along with other senior officers. During the visit, Shri Rajnath Singh reviewed the operational readiness of the formation in the easternmost part of the country. He was briefed on infrastructure development along LAC as well as capability development & operational preparedness by General Officer Commanding, 3 Corps Lieutenant General RC Tiwari and other senior officers. The Raksha Mantri was also briefed on employment of cutting-edge military equipment & technology to enhance operational efficiency of the troops deployed in frontline. He commended the stellar work and yeoman services being rendered by all ranks of Spear Corps under challenging conditions.

On September 29, 2022, Shri Rajnath Singh will visit forward posts to make on-ground assessment of the operational preparedness and interact with troops. He will also interact with members of second religious expedition to Athu Popu, an annual trek of local Idu Mishmi tribe which is being facilitated by Indian Army since 2021 as part of outreach and continued efforts

towards supporting the locals & development of tourism. The Raksha Mantri will also review infrastructure projects of Border Roads Organisation (BRO) during his three-day visit.

https://pib.gov.in/PressReleasePage.aspx?PRID=1863102

Press Information Bureau
Government of India

Ministry of Defence

Wed, 28 Sept 2022 12:45 PM

INS Sunayna Participates in Combined Maritime Forces (CMF) Exercise at Seychelles

INS Sunayna participated in the capacity building exercise Operation Southern Readiness conducted by Combined Maritime Forces (CMF) at Seychelles from 24-27 Sep 22. The Indian Navy was welcomed to the CMF by Vice Admiral Brad Cooper, US NAVCENT. This is the maiden participation of an Indian Navy ship in CMF exercise. As part of the interactive sessions attended by representatives of the participating countries, a training lecture on Maritime Domain Awareness was conducted by the Indian Navy. A live demonstration on Visit Board Search & Seizure (VBSS) operations was also conducted onboard HMS Montrose led by the Seychelles Special forces with close support from the Indian Naval team. The event was coordinated as part of Distinguished Visitor's demonstration and witnessed by Mr Wavel Ramkalawan, the Hon'ble President of the Republic of Seychelles and senior officials of member countries of CMF. The participation of Indian Navy in the joint exercise was highly appreciated.

https://pib.gov.in/PressReleasePage.aspx?PRID=1862860

THE ECONOMIC TIMES

Thu, 29 Sept 2022

Arming Armenia: India to Export Missiles, Rockets and Ammunition

Defence India has signed a significant export order for missiles, rockets and ammunition to Armenia as the Asian nation is engaged in a prolonged border conflict with neighbour Azerbaijan. The government to government route was used to sign a number of contracts for the supply of arms and ammunition to Armenia earlier this month. While the value of the contracts has not been revealed, it is estimated that weapons worth over Rs 2,000 crore will be supplied to the country over the coming months. India has been making significant efforts to increase weapons exports, with policy reforms and active support of the government to secure overseas orders. Sources told ET that the order includes the first-ever export of the indigenous Pinaka multi-barrel rocket launchers that are already in service with the Indian Army.

The potent weapon has been designed by the Defence Research and Development Organisation (DRDO) and is manufactured by private sector companies in India.

The Army has recently placed orders for six additional Pinaka regiments and is testing extended range rockets as well. India will also supply anti-tank rockets as well as a range of ammunition to Armenia under the bundled deal. This is not the first time that weapon systems have been exported to Armenia. In 2020, India beat competitors from the region to supply four Swathi radars to the nation for an estimated Rs 350 crore. Designed to the specifications of the Indian Army, these radars are used to track incoming artillery shells, mortars and rockets and give a pinpoint location of enemy launchers and positions. The radars have been successfully employed on both Pakistan and China borders.

India has been making focused efforts to increase defence exports, with a target of Rs 35,000 crore worth of equipment to be sold abroad by 2025. Last year, annual defence exports were close to Rs 13,000 crore, driven primarily by the private sector.

https://economictimes.indiatimes.com/news/defence/arming-armenia-india-to-export-missiles-rockets-and-ammunition/articleshow/94518414.cms

JANES

Tue, 27 Sept 2022

India to Equip Arjun Mk 1A MBTs with Advanced Targeting System

India's state-run Bharat Electronics Limited (BEL) is equipping the Indian Army's new Arjun Mk 1A main battle tank (MBT) with an electro-optical (EO) fire-control system. A source from Tonbo Imaging told Janes that the company is manufacturing the system in partnership with BEL's unit in Chennai, India. “Tonbo Imaging is partnered with BEL, Chennai, to meet [BEL's] demand for fire-control systems. Hence, BEL awarded us a contract to manufacture and deliver the [electro-optical fire-control system] for Arjun Mk 1A MBTs,” the source added. According to the source, the contract features the delivery of the Elpeos fire-control product.

The source also confirmed that Tonbo Imaging will deliver the Elpeos to BEL for integration onto the Arjun Mk 1A MBTs. Tonbo Imaging describes the Elpeos as an EO sight for remote-controlled weapon stations (RCWSs). The Elpeos system has an integrated multisensor and is designed for precision targeting. The Elpeos system has been designed for integrated automatic target tracking and electronic video stability. It has a gyroscope-based stabilising mechanism that compensates for vibrations, providing steady images. The system automatically identifies and tracks multiple targets, with the objective to reduce the soldier's involvement. The system analyses the images to identify the target of interest within a specific area, decreasing user participation.

It integrates a cooled medium-wave infrared (MWIR) imager, a colour high-definition (HD) charge-coupled device (CCD) camera, a laser rangefinder (LRF), and a ballistic computer. The integrated LRF has a range of 6 km and delivers target data directly to the fire-control system. In September 2021 India's Ministry of Defence (MoD) signed an INR75.23 billion (USD924 million) contract with the state-owned Heavy Vehicles Factory (HVF) for 118 locally

developed Arjun Mk 1A MBT variants for the Indian Army. The MoD said that, apart from an advanced tracking system, “the Arjun Mk 1A integrates 72 new features over the Mk 1 model to ensure effortless mobility in all terrains and precise day-and-night target engagement”.

Janes earlier reported that the Arjun Mk 1A includes about 19 “major improvements” over the Mk 1. These include additional panels of locally developed ‘Kanchan' explosive reactive armour (ERA), advanced thermal imaging sights for operating at night, new commander's sights, advanced navigation systems, and digital control harnesses. Tonbo Imaging is also upgrading the Indian Army's BMP-2 infantry combat vehicles with see-through armour, anti-unmanned aerial vehicle (UAV) capabilities, thermal imager-based gunner and panoramic commander sights, a modern fire-control system, and an automatic target tracker. The goal of the Arjun Mk 1A programme was to develop an upgraded and more capable variant of the Arjun Mk 1 while the Mk II was still in development.

Janes reported in April 2017 that the Indian Army was locked in a stand-off with the state-run Defence Research and Development Organisation (DRDO) over the weight of its Arjun Mk II MBT variant. The army wanted the DRDO to reduce the MBT's weight without depreciating its enhanced capabilities. With a large proportion of its fleet of 124 Arjun Mk 1 MBTs – each weighing 62.65 tonnes – inoperable because of technical and maintenance problems since mid-2015, the army was disinclined to certify the government's contract for 118 upgraded Mk IIs weighing in at 68.24 tonnes per tank. After the Indian Army and DRDO stand-off, the Arjun Mk II MBT project was stalled. In 2021 the MoD announced the Arjun Mk 1A programme. However, the specifications of Mk II and Mk 1A were perceived as similar.

The Mk 1A weighs around 68.25 tonnes. Janes reported in 2021 that the Mk 1A MBT was assessed as being overweight, capable of being deployed only in select pockets in the desert, where it does not need to be overly mindful of the terrain. Janes has learnt that the Elpeos automatic tracking system in the Arjun Mk 1A is a rare development that has not been available in the Mk II prototypes.

https://www.janes.com/defence-news/defence/latest/india-to-equip-arjun-mk-1a-mbts-with-advanced-targeting-system

The Tribune

Thu, 29 Sept 2022

Anti-Drone System to be Deployed Along LoC

Lt Gen Manjinder Singh, General Officer Commanding (GoC), 16 Corps (White Knight Corps), on Wednesday said an anti-drone system would be deployed along the Line of Control in the region soon. Based in Nagrota, the White Knight Corps guards the LoC and major part of Jammu region. “Drone sighting along the LoC takes place two or three times in a month in the areas guarded by us. Most of these are apparently on reconnaissance mission and not to dump narcotics. We are in process of procuring anti-drone equipment after which our guard along the

LoC will strengthen," he said during the Golden Jubilee celebrations in Nagrota where an event—Know Your Army— was organised to motivate the youth to join the Army.

The officer also informed that terrorism in Jammu division was at its lowest level as there were a few active terrorists in the region. "The violence in Jammu region is significantly low. New recruits are joining terror outfits mostly in the Kashmir valley," he said. He however said that some of the youth from Jammu division were joining the narco-terror nexus to smuggle drugs as their villages are close to the LoC. "We are keeping a close watch on such youth who are involved in smuggling from border areas as their villages are located along the Line of Control," he added.

https://www.tribuneindia.com/news/j-k/anti-drone-system-to-be-deployed-along-loc-436324

THE TIMES OF INDIA

Thu, 29 Sept 2022

Eye on China and Pakistan, Army Set to Buy Armed-Drone Swarms

The Army is slowly but steadily stepping-up the induction of explosive-armed drones. As it gears up to soon induct the first batch of 'loitering munitions' or kamikaze drones, the force on Wednesday also kicked off the acquisition process for 12 sets of armed drone swarms. Seven of these 12 autonomous surveillance and armed drone swarms (A-SADS), each with 50-75 artificial intelligenceenabled aerial vehicles capable of communicating with control stations as well as among themselves, are meant for high-altitude areas.

They will boost the Army's `shock and awe' capabilities along the northern borders with China. Explosive-armed drone swarms have proved their sheer utility and lethality in recent conflicts ranging from Armenia-Azerbaijan to RussiaUkraine," a senior official said. The other five drone swarms are for defensive and offensive operations in desert areas and plains along the borders with . "All the 12 sets of swarm drones will be acquired through the Buy-Indian IDDM (indigenously designed, developed and manufactured) category at an estimated cost of Rs 700 crore," he added.

The request for information (RFI) issued for the A-SADS on Wednesday specified they will be procured under the BuyIndian IDDM (indigenously designed, developed and manufactured) category, and should have an indigenous content of at least 50%. The RFI said the drone swarms for deserts should have an operating range of at least 50-km one-way, with an endurance of minimum three hours. The high-altitude ones, in turn, should have a 30-km range and two-hour endurance, with the capability to even operate in minus 20 degree Celsius. The A-SADS will carry explosive payloads for anti-personnel as well as "shaped charge top-attack ammunition" for use against enemy tanks and armoured columns.

"The drone swarms, which should be capable of vertical take-off and landing from unprepared areas, should be able to carry out Kamikaze kinetic attacks on targets like tanks, helipads, air defence equipment, radars, fuel dumps and command-and-control centres," another officer said. The use of drone swarms, robotics, lasers, loitering munitions and LAWS (lethal autonomous

weapon systems) are relatively new domains of war-fighting for the Indian armed forces. “China is far ahead in these fields. But a beginning has to be made. A group of drones operating in conjunction with ground manoeuvre forces can provide aerial capability to enhance combat effectiveness,” he added.

AI-based swarming algorithms enable the drones to automatically distribute the tasks among themselves, navigate to the area of interest, ensure collision avoidance during movement to the target area, and carry out search of the area.“AI-based automatic target recognition (ATR) feature enables the drones to recognise targets like tanks, artillery guns, vehicles and soldiers and display it on control station screens. This minimizes chances of the operator missing any target as well as facilitates use of some other weapon to destroy the targets,” he said.

https://timesofindia.indiatimes.com/india/eye-on-china-and-pakistan-army-set-to-buy-armed-drone-swarms/articleshow/94522387.cms

बुधवार,28 सितंबर 2022

क्या है एडवांस टोड आर्टिलरी गन सिस्टम, कैसे दुश्मनों के लिए बनेगा काल, जानिए इसकी खासियत

सफलतापूर्वक परीक्षणों को पास करने के बाद भारतीय सेना को जल्द ही एक और आर्टिलरी गन सिस्टम मिल सकता है. न्यूज़ एजेंसी ANI की एक रिपोर्ट के मुताबिक एडवांस टोड आर्टिलरी गन सिस्टम (ATAGS) परीक्षण के बाद जल्द सेना को सौंपा जा सकता है. रक्षा सूत्रों के अनुसार ATAGS प्रणाली को एक ग्रीनफील्ड परियोजना के तहत विकसित किया जा रहा है. यह डीआरडीओ और भारतीय निजी क्षेत्र के बीच एक सफल साझेदारी का परिणाम है.

सूत्रों ने यह भी खुलासा किया कि भारतीय सेना मैकेनाइज्ड फॉर्मेशन के लिए मारक क्षमता बढ़ाने के लिए के-9 वज्र को शामिल करने के लिए तैयार है. इनको शामिल करने के लिए रक्षा अधिग्रहण परिषद (डीएसी) की मंजूरी भी मिल गई है. आपको बता दें कि वज्र ने भारतीय सेना की क्षमता को मारक क्षमता और एक्शन के मामले में कई गुना बढ़ा दिया है. फिलहाल सेल्फ प्रोपेल्ड गन वज्र देश के ऊंचाई वाले क्षेत्रों में तैनात की गई हैं .वहीं ATAGS का भी 15,000 फीट की ऊंचाई पर सफलतापूर्वक परीक्षण किया जा चुका है.

क्या है ATAGS

ATAGS एक स्वदेशी लंबी दूरी की कैलिबर होवित्जर तोप है जिसे एटीएजीएस परियोजना के तहत डीआरडीओ द्वारा 2013 में सेना की पुरानी तोपों को आधुनिक 155 मिमी आर्टिलरी गन से बदलने के लिए शुरू किया गया था. जंग खा रही पुरानी तोप के मुकाबले ATAGS की आयुध प्रणाली में मुख्य रूप से बैरल, ब्रीच मैकेनिज्म, मजल ब्रेक और रिकॉइल मैकेनिज्म होता है, जो सेना को लंबी दूरी, सटीकता और 155 मिमी कैलिबर के साथ गोला बारूद को फायर करने के लिए अधिक मारक क्षमता प्रदान करता है. साथ ही इस तोप को लंबे समय तक रखरखाव मुक्त और इसके रिलाएबल ऑपरेशन को सुनिश्चित करने के लिए अत्याधुनिक इलेक्ट्रिक ड्राइव के साथ कॉन्फ़िगर किया गया है.

52 किलोमीटर तक साध सकती है निशाना

ATAGS तोप आंखों से न दिखने वाले टारगेट पर भी बेहद सटीक निशाना साध सकती है. यह आर्टिलरी गन अपनी श्रेणी की तोपों की तुलना में दो टन हल्की है और इसे बेहतर सटीक और अधिक रेंज प्राप्त करने के लिए डिज़ाइन किया गया है. DRDO के अनुसार 52 किलोमीटर की रेंज के साथ एक समय में लगातार पांच राउंड फायरिंग करने में सक्षम ATAGS दुश्मन को संभलने तक का मौका नहीं देती है. फिलहाल रक्षा विशेष्ज्ञ ATAGS की रेंज को रैमजेट प्रोपल्शन की मदद से 60 किलोमीटर से अधिक करने के लिए कार्य कर रहे हैं.

https://hindi.news18.com/news/nation/what-is-atags-gun-how-will-the-time-be-made-for-enemies-know-its-specialty-4660217.html

अमर उजाला

बुधवार,28 सितंबर 2022

स्वदेशी तोप 'अटैग्स' जल्द सीमा पर गरजेगी, 15 अगस्त को लाल किले से दी थी सलामी

सेना हर साल 28 सितंबर को गनर्स डे तोपखाना दिवस मनाती है। इसलिए आज के दिन एडवांस टोड आर्टिलरी गन सिस्टम अटैग्स को लेकर आई यह खबर अहम है। इसका अब सिर्फ पर्यावरण परीक्षण बाकी है। यह एक-दो माह में पूरा हो जाएगा। आज मनाए जा रहे 196वें गनर्स डे के मौके पर भारतीय सेना के लिए अच्छी खबर आई है। स्वदेशी तोप 'अटैग्स' (ATAGs) को जल्द सीमा पर तैनात किया जा सकता है। इसके कुछेक परीक्षण बाकी हैं। इस बार स्वतंत्रता दिवस के मौके पर पहली बार इसी स्वदेशी तोप से सलामी दी गई थी। आजादी के अमृत महोत्सव काल में यह बड़ी उपलब्धि है। सेना हर साल 28 सितंबर को गनर्स डे तोपखाना दिवस मनाती है। इसलिए आज के दिन एडवांस टोड आर्टिलरी गन सिस्टम अटैग्स को लेकर आई यह खबर अहम है। इसका अब सिर्फ पर्यावरण परीक्षण बाकी है। यह एक-दो माह में पूरा हो जाएगा।

सैन्य सूत्रों के अनुसार अटैग्स को सेना में शामिल करने के बाद पाकिस्तान व चीन से सटी सीमाओं पर तैनात किया जा सकता है। भारतीय सेना इन इलाकों में अपनी स्थिति मजबूत करने के लिए लगातार जुटी है। इसी इरादे से इन सीमावर्ती क्षेत्रों में दक्षिण कोरिया की के-9 वज्र तोप, स्वदेशी धनुष और अमेरिकी की होवित्जर एम.777 के अलावा स्वदेशी पिनाका रॉकेट सिस्टम को भी तैनात किया जा रहा है। सेना ने जारी किया वीडियो गनर्स डे के मौके पर सेना ने आज एक वीडियो जारी किया है। इसमें सेना के तोपखाने को 'गॉड ऑफ वॉर' करार दिया गया है। अटैग्स को रक्षा अनुसंधान व विकास संगठन (DRDO) ने टाटा और भारत फोर्ज के साथ मिलकर तैयार किया है। इसकी मारक क्षमता 48 किलोमीटर है। इससे पहले 2018 में रक्षा मंत्रालय ने 150 अटैग तोपें खरीदने की मंजूरी दी थी।

https://www.amarujala.com/india-news/indigenous-artillery-atags-will-soon-deploy-on-border-know-all-about

Firstpost.

Wed, 28 Sept 2022

From ATAGS to Ultra-Light Howitzers, how Indian Army is Upping Artillery Game at Borders

The Indian Army is upping its firepower on the northern and eastern borders by deploying rockets and making plans to secure weapon systems such as the 100 K9 Vajra howitzers and UAVs. Already the Indian Army's artillery units have put into action K-9 Vajra Tracked Self-Propelled Howitzers, Ultra-Light M-777 howitzers, Pinaka rocket systems and Dhanush gun systems. Sources said the army is set to procure a new batch of 100 more K9 Vajras howitzers, in addition to 100 such guns ordered in 2017. "The Defence Acquisition Council has cleared the proposal for ordering 100 more K9 Vajras. The Request for Proposal (RFP) will be issued soon," the source said.

Sources said the Army is also in the process of procuring Advanced Towed Artillery Gun System, commonly known as ATAGS, and Mounted Gun Systems (MGS). Faced with an increasingly belligerent China, the Indian Army has increased its firepower by deploying a variety of rockets and artillery, and plans to further acquire a variety of weapon systems.

ATAGS

"My friends, today we heard this sound after 75 years of independence for which our ears were yearning to hear. For the first time after 75 years, the Made in India cannon has saluted the Tricolour from the Red Fort. Will there be any Indian who will not be inspired by this sound?" said Prime Minister Narendra Modi on India's 76th Independence Day. The prime minister was referring to the indigenously-made Advanced Towed Artillery Gun System (ATAGS), used alongside the traditional British-origin '25 Pounders' artillery guns, when he made these remarks. Howitzers is an umbrella term for a category of long-range artillery guns, as per *Indian Express.*

As per *Eurasian Times,* the 155 mm ATAGS is the brainchild of India's Defence Research and Development Organisation (DRDO) and developed by its Armament Research Development Establishment (ARDE) and Armament Combat Engineering Systems (ACE) in Pune. Bharat Forge Ltd (of Kalyani Group) and Tata Advanced Systems Ltd are also part of its manufacturing. DRDO's Sangam Sinha told the outlet the ATAGS howitzer is a "game changer" as it is the first in the world to have a 45 kilometre range, it is self-propelled and can be towed easily.

ATAGS comes with electric drives to ensure maintenance-free and reliable field operations even in the extreme cold. The gun incorporates compact thermal imaging sight and surveillance system, Software Defined Radio (SDR) based advanced communication, high power, compact 'auxiliary power' unit for achieving enhanced cross-country mobility, walking-beam suspension for negotiating difficult terrains, simultaneous voice, and data communication and fire control computer.

It is also equipped with an "Integrated Fire Control system" consisting of an INS-based Automatic Gun Alignment and Positioning System (AGAPS), Muzzle Velocity Radar (MVR), and Ballistic Computer to carry out online computations. Sources said the ATAG is in 'advanced

stages' of trial and has many firsts to its credit — 25-litre chamber, long range, as also rapid and sustained rates of fire. Sources said the user trials on the gun systems have been satisfactorily conducted and that there are few procedural issues that are being taken care of.

K9 Vajras

The K9 Vajras were originally procured for deployment in deserts, but following the eastern Ladakh standoff, the army deployed a significant number of the howitzers in that high-altitude region. The sources said minor adjustments were made for deployment of the tracked howitzers in eastern Ladakh. "We are also procuring winterisation kits so the howitzers work in sub-zero temperature," the source said, adding the Vajra guns are roaring in high altitude area along Northern borders.

As per *The Print,* the Indian Army is set to order 100 more K9 Vajra Tracked Self-Propelled Howitzer from Larsen and Toubro (L&T). "We have got the clearance from the Ministry of Defence to order for 100 more Vajras. The Request for Proposal (RFP) will be issued to L&T soon after which the cost negotiations will be carried out. We will fast-track the process and hope to have the deliveries started soon," a source in the defence and security establishment told the outlet.

L&T won the Rs 4,500-crore contract to supply 100 units of K9 Vajras under the 'Make in India' initiative in 2017 for which it signed a transfer of technology contract with South Korean company Hanwha Corporation. According to L&T, K9 Vajras are delivered with more than 80 per cent indigenous work packages and above 50 per cent indigenisation (by value) at the programme level.

Pinaka weapon systems

They said induction of more advanced Pinaka weapon systems is in the offing, adding six more regiments of the systems are being procured and their delivery would commence soon. Sources said the new Pinaka regiments will be equipped with electronically and mechanically improved weapon system capable of firing variety of ammunition over longer ranges. One regiment of Pinaka has been inducted along Northern borders in high altitude area after extensive validation, they said, adding the defence ministry has already approved procurement of guided extended range rockets for Pinaka.

"We are raising six more Pinaka regiments with longer range rockets, up from 36 km to 48 km. Then there are guided extended range rockets that can hit targets 75 km away. This is all indigenous. These new regiments will be equipped electronically and mechanically improved weapon systems capable of firing variety of ammunition over longer ranges," a person familiar with the matter told *Hindustan Times.* "The rocket would be capable of firing at longer ranges with significant accuracy," the source said.

M777 ULH, Dhanush system, LMS

As per *The Hindu,* the army has deployed the M777 Ultra-Light Howitzers (ULH) in the Rest of Arunachal Pradesh (RALP) near the Line of Actual Control (LAC) . Weighing just four tonnes, the M777 is a 155-mm, 39-calibre towed artillery gun. India has contracted 145 M777 guns from the BAE Systems and over half of them have been inducted, as per the report. The M777 gives significant flexibility in the employment options for long range fire power, an officer told the outlet. "It can be airlifted to any forward location when required which is especially useful in RALP given the uneven terrain and thick forest cover," the officer added. As per *MSN,* the

Indian Army in 2019 signed a deal to procure 114 Dhanush 155 mm/45-calibre towed howitzers and has inducted 18 of them thus far.

The guns, which have a strike range of 38 kilometres, were manufactured at the erstwhile Jabalpur-based Gun Carriage Factory (GCF) at a cost of Rs 14.50 crore, with each shell costing 1 lakh. The army has already operationalised its first Dhanush regiment along the China border, and is now looking at raising a second regiment with 18 guns by March 2023, those familiar with the matter told *Hindustan Times.* "The Dhanush gun system has been inducted and operationalised in high altitude along the northern borders (with China). The gun is an electronically and mechanically upgraded version of the Bofors gun. It represents a huge step towards self-reliance in defence manufacturing," the newspaper quoted one individual as saying.

Dhanush gun is an electronically and mechanically upgraded version of the Bofors gun and the first regiment inducted along Northern borders after extensive validation. Dhanush Gun System is a major milestone in the history of indigenous development of Artillery Guns and a huge step towards Atmanirbharta in defence manufacturing. Sharang gun is also going for enhancement of 130 mm gun system and with a successful up-gunned gun with better range, accuracy and consistency corroborating Indigenous Defence Capability. The army is also in the process of procuring 'Loitering Munition System' thereby augmenting its surveillance, target acquisition and precision strike capability.

Deliveries of these precision-strike loitering munitions –y smaller and cheaper explosive-armed kamikaze drones that wait to select high-value enemy targets and then crash into them – are set to begin under an emergency procurement contract inked with an Israeli-Indian private joint venture last year, as per *The Times of India.* Ukrain has used Switchblade 300 and Phoenix Ghost loitering munitions supplied by the US as well as locally-assembled weapons to turn back Russian troops, as per the report. "We are also in the process of procuring indigenously designed and developed Loitering Weapon System with enhanced strike capability," the source said.

Sources in the defence establishment also said the army plans to equip its Artillery units along the Line of Actual Control (LAC) with Unmanned Aerial Vehicles (UAV) with a range of up to 90 kilometres. "We are looking at procuring UAVs having a range of 15-20 kms as well as those having capabilities to carry out surveillance at a range of up to 80kms having an endurance of four hours," said a source.

https://www.firstpost.com/explainers/explained-from-atags-to-ultra-light-howitzers-how-indian-army-is-upping-artillery-game-at-borders-11349451.html

The Tribune

Thu, 29 Sept 2022

Dragon's Shadow Over Delhi-Dhaka Ties

By Ashok K Mehta

After last year's triple India-Bangladesh celebrations — 50 years of the Liberation War, 50 years of India-Bangladesh relations and the birth centenary of Bongobondhu Sheikh Mujibur Rahman

— and this month's visit of Prime Minister Sheikh Hasina, both countries have described bilateral relations in the rosiest of terms. India has called the relationship a "role model" and Bangladesh the launch pad for its Act East policy as well as a frontline state of its Neighbourhood First policy.

Hasina recently said: "I reiterate that India is the most important and closest neighbour of Bangladesh. The relationship between Bangladesh and India is a role model for neighbourhood diplomacy worldwide." The frequency of high-level visits between the leaders of the two countries is unique and unsurpassed by any other bilateral. Yet, this month, retired Brigadier General Qazi Abidus Samad of the Bangladesh Army wrote in the Dhaka Tribune that due to a threat perception from India, defence cooperation was affected and delayed despite the fact that Gen Hussain Muhammad Ershad (later President) was the first to attend the National Defence College in New Delhi in 1982.

He listed out a number of grievances Dhaka had like depriving it of "our share of water from Padma and Teesta rivers", consequent river erosion and displacement of people and killings by the BSF on the border — once when Hasina was in India, thereby dishonouring her. But now, officers regularly attend each other's NDC. When I was invited to Dhaka to attend the War of Liberation ceremonies in 2010 after Hasina became the Prime Minister in 2009, I was feted as Mukti Jodha and made much of as part of a team of Bangladesh veterans. Bangladeshis' love and affection for the veterans was eye-opening.

When I went to Dhaka for a conference before the pandemic and met our Defence Adviser, he informed me that the Bangladesh Army conducts its military exercises, painting India as 'red land'/bad land/enemy. Until recently, Nepal also used to portray India as 'red land'. Every country is trying to identify its external threat. Soon after Soviet Union's collapse, British Chief of Defence Staff, Gen Edwin Bramall, told me: "We now have no enemy. We are looking out for one."

The UK now has an immediate and proximate adversary — Russia and China. US Secretary of State Antony Blinken called China the most serious long-term challenge to the international order. Adversary challenge classification is either threat or capability based. Both approaches are being redefined due to great power competition, including the Ukraine war. In Bangladesh, the Armed Forces Division, currently headed by Lt Gen Waker-uz-Zaman, is the most important organ of the military. It's responsible for arms procurement, military diplomacy and coordination among the other two services. It is very powerful. The last and the fourth Annual Defence Dialogue was held this year between Defence Secretary Ajay Kumar and Lt Gen Zaman.

The big worry for India is China and its creeping shadow over its neighbourhood. Dhaka has traditionally enjoyed very stable and sound relations with Beijing, especially in the defence sector. Almost 80 per cent of Bangladesh's arms are sourced from China, including two Ming-class submarines. China is also its biggest trade partner ($18 billion), biggest investor ($26 billion) and has made project commitments worth $38 billion.

Foreign Minister Wang Yi on a recent visit to Dhaka thanked it for its "one-China" policy after the Taiwan episode. Foreign Minister AK Abdul Momen has described relations as "historic and rock solid" with China as a development partner. Last year, though, Chinese Ambassador to Dhaka Li Jiming asked Bangladesh not to join the Quad which stirred the diplomatic hornet's nest. Bangladesh has trimmed its projects with China — cancelled the high-speed Dhaka Chittagong railway line, but it won projects to construct the Sylhet airport and the Padma Bridge.

Bangladesh, once a basket case, is now entering the middle-income group. It is on a very sound economic footing with stable macro-economic fundamentals. Its decade-long growth at six per cent has made it the 41st largest economy with a comfortable foreign exchange reserve of $40 billion, a rising per capita income and it is the second largest exporter of textiles in the world. It has overtaken India in several human development and growth indices due to a prudent policy on remittances, exchange rate reform, trade liberalisation (before India) and development projects with immediate spinoff like the recent Padma Bridge.

To prevent economic crisis like in Sri Lanka and Pakistan, it has sought $4.5 billion from the International Monetary Fund. A strong economy strengthens Hasina's hand among the establishment. The state of bilateral relations is invariably exaggerated, partnerships embellished with terms like strategic special, privileged and lately "no limit" between Russia and China.

The India-Bangladesh relationship is more down to earth, with both sides aware, if not always sensitive, to mutual fears and concerns. To Brig Samad's grievance list can be added: issues related to the CAA-NRC, border management, joint management of 54 rivers, return of members of the Tablighi Jamaat and Indian help in repatriation of 10 lakh Rohingyas. India has sought close security cooperation, protection of Hindus and temples, expressed fears of revival of Islamist extremism and sanctuaries for insurgents and urged focus on counter-terrorism, connectivity, power trade, resilient supply chains and finalising the Comprehensive Economic Partnership Agreement. India's Lines of Credit of $8 billion (2017) for 30 projects has so far yielded only $1.5 billion.

China's growing influence in Bangladesh is a serious concern after land grab in eastern Ladakh and Doklam incursions creeping towards the Siliguri corridor. Beijing is curating a thaw between Pakistan and Bangladesh, though Pakistan is yet to apologise for war crimes in 1971. Hasina has ensured steady and stable bilateral relations with New Delhi, though India has put all its eggs in Hasina's basket. These need to be redistributed. A deeper military-to-military relationship is imperative to prevent India from being caught on the back foot.

https://www.tribuneindia.com/news/comment/dragons-shadow-over-delhi-dhaka-ties-436278

THE TIMES OF INDIA

Wed, 28 Sept 2022

No Difficulties with Russia on Servicing of Military Equipment, Spare Parts: Jaishankar

India has said that it faced no difficulties in terms of servicing and spare parts supply of equipment that it received in the past from in the aftermath of the war in Ukraine and asserted that it exercises a choice which it believes is in its national interest when it is offered weapons. External affairs minister S Jaishankar made the remarks during a joint press conference with US Secretary of State Antony Blinken here on Tuesday after holding bilateral talks. "I don't think in recent months we have faced any particular problems in terms of servicing and spare parts supply of (military) equipment that we have got in the past from Russia," Jaishankar told reporters while responding to a question. He was asked about India's plans for military hardware and equipment given the sanctions that the US and others are putting on Russian industry and whether India will look at more purchases of American or Israeli military equipment. "Where we get our military equipment and platforms from, that's not an issue, honestly, which is a new issue or an issue which has particularly changed because of geopolitical tensions," Jaishankar said.

India, he noted, looks at possibilities across the world. "We look at the quality of technology, the quality of capability, the terms on which that particular equipment is offered, and we exercise a choice which we believe is in our national interest," he said. In the last 15 years, for example, India has actually procured a lot from the United States, he said. "If you maybe consider, for example, aircraft – the C-17, the C-130, the P-8, or the Apache helicopter or the Chinooks or the Howitzers, the M777 Howitzers – we have done so from France when we recently bought their Rafale aircraft. We have done so from Israel," the minister noted. "So, we have a tradition of multi-sourcing and for us, how to get the optimal deal from a competitive situation is really what this is all about," Jaishankar said. Russia has been a major supplier of military hardware to India. The two countries have been holding discussions on what kind of payment mechanisms can work between them in view of the Western sanctions on Moscow.

The 'Triumf' interceptor-based missile system can destroy incoming hostile aircraft, missiles and even drones at ranges of up to 400 kms. Russia had started delivery of the first regiment of the missile in December last year. The missile system has already been deployed in such a way that it can cover parts of the border with China in the northern sector as well as the frontier with Pakistan. In October 2018, India had signed a USD 5 billion deal with Russia to buy five units of the S-400 air defence missile systems, notwithstanding warning from the then Trump administration that going ahead with the contract may trigger US sanctions under CAATSA. Countering America's Adversaries Through Sanctions Act or CAATSA is a tough US law which authorizes the administration to impose sanctions on countries that purchase major defence hardware from Russia in response to Russia's annexation of in 2014 and its alleged meddling in the 2016 US presidential elections.

https://timesofindia.indiatimes.com/india/no-difficulties-with-russia-on-servicing-of-military-equipment-spare-parts-jaishankar/articleshow/94509413.cms

INDIA TODAY

Wed, 28 Sept 2022

All About Carl-Gustaf M4, the Swedish Weapon System Set to be Manufactured in India

The Carl-Gustaf M4 weapons system by the Swedish defence company Saab is set to be manufactured in India, announced Görgen Johansson, head of Saab's business area Dynamics. In this effort, Saab has decided to set up a manufacturing facility in India, under its new company Saab FFV India, which is currently under registration. The Carl-Gustaf weapon system manufactured by Saab is one of the most evolved and versatile weapon systems. It has undergone years of innovation and has been used by the Indian Army for decades. Its latest iteration, the Carl-Gustaf M4, is a recoilless man-portable, multi-role weapon system which can use a wide variety of ammunition. Here is everything you need to know about the weapon system with advanced technology, which is set to be manufactured in India beginning in 2024.

One weapon. Any task

The tagline of the Carl-Gustaf M4 weapon system is 'One weapon. Any task'. It weighs less than seven kilos and is under one metre in length. Its programable and versatile ammunition makes it an anti-armour, anti-structure and anti-personnel weapon system. "The Carl-Gustaf provides the effectiveness soldiers need to shut the enemy down before they can react in all environments," states the official website. This single-weapon system increases tactical flexibility while reducing the amount of equipment to carry in all situations. The Carl-Gustaf M4 helps soldiers with a multitude of missions they may have to accomplish on the battlefield. Whether it is dealing with armoured units, clearing obstacles or fighting enemies in buildings, the Carl-Gustaf M4, with its advanced fire control and programmable ammunition, is up to the task. According to the website, it is the total package of weapons, sights, ammunition, training and support.

Multiple Sights & Precision Ammo

The Carl-Gustaf M4 can be fitted with a wide range of sights to ensure maximum effect in any tactical situation and flexibility for users, states the official website. The system comes equipped with a standard clip-on telescopic sight, but it also has other options including open sight, red-dot and advanced fire control. It also comes with improved sensors for temperature and air pressure, along with optical and night capability, giving ground forces the advantage in every scenario.

All ammunition for the Carl-Gustaf M4 is 84 mm calibre. However, they cover all kinds of potential enemy targets. It also comes with illumination rounds for night battles and instant smoke rounds to blink enemies. Here is a list of some of the ammunition it comes with and its purpose:

HEDP 502/502 RS - Armoured vehicles, enemies protected by structures like sandbags, brick and wooden walls.

MT 756 - Enemy troops inside a building or behind a structure and light-armoured vehicles.

ASM 509 - Enemy troops in buildings and structures through high-pressure blast effects. It comes with both impact mode and delay mode.

HEAT 551 - This is rocket-assisted and is effective against Main Battle tanks from the side or rear.

HEAT 751 - Neutralises explosive reactive armour (ERA) before penetrating the target's main armour.

ADM 401 - Combats enemy troops in soft-skinned vehicles by launching a cluster of flechettes

SAAB And Indian Defence

The Carl-Gustaf system has been in service with the Indian Army since the first cooperation agreement for production in India was signed in 1976. Saab has also partnered with Indian companies in the past to make components for its products. Saab's partnership with Munitions India Limited (MIL) and Advanced Weapons and Equipment India Limited (AWEIL) to manufacture the Carl-Gustaf weapon and its ammunition will continue, said a press release from the organisation.

"It is a natural step to set up a production facility for the Carl-Gustaf M4 in India given the long and close association we have with the Indian Army as one of the foremost users of the system. We are glad to be able to contribute to the Government of India's goals of developing a world-class defence industry and proud to offer the Indian Armed Forces our Carl-Gustaf M4 made in India," said Görgen Johansson, head of Saab's business area Dynamics.

https://www.indiatoday.in/india/story/all-about-carl-gustaf-m4-swedish-weapon-system-manufactured-india-2005794-2022-09-28

THE HINDU

Wed,28 sept 2022

North Korea Test Launches Missile on Eve of Kamala Harris Trip to Seoul

North Korea fired a ballistic missile toward its eastern waters on Wednesday, South Korea's military said, a day before U.S. Vice President Kamala Harris is to visit the South. South Korea's Joint Chiefs of Staff said it detected the North Korean missile launch but gave no further details, such as when and where the weapon was fired and how far it traveled. The launch is the second by North Korea this week. Ms. Harris is to arrive in South Korea on Thursday for talks with President Yoon Suk Yeol and other officials. She also is to visit the tense border with North Korea, in what U.S. officials call an attempt to underscore the strength of the U.S.-South Korean alliance and the U.S. commitment to "stand beside" South Korea in the face of any North Korea threats.

U.S. and South Korean navy ships are also conducting drills off South Korea's east coast in a show of force against North Korea. The four-day exercise, which began Monday, involves the nuclear-powered aircraft carrier USS Ronald Reagan. It is the first training exercise by the allies involving a U.S. aircraft carrier near the Korean Peninsula since 2017. South Korea-U.S. joint

military exercises often draw a furious response from North Korea, which views them as an invasion rehearsal. A short-range North Korean missile launched Sunday was seen as a response to the U.S.-South Korean training.

North Korea has dialed up its testing activities to a record pace in 2022, testing more than 30 ballistic weapons, including its first intercontinental ballistic missiles since 2017. North Korea is exploiting a divide in the United Nations Security Council that deepened over Russia's war against Ukraine to speed up its arms development. North Korean leader Kim Jong Un has threatened repeatedly that his country will proactively use its nuclear weapons if threatened, increasing security concerns in conventionally armed South Korea.

https://www.thehindu.com/news/international/north-korea-test-launches-missile-on-eve-of-kamala-harris-trip-to-seoul/article65945930.ece

Science & Technology News

INDIA TODAY

Wed, 28 Sept 2022

23 IITs to Come Together for Research and Development Fair IInvenTiv

For the first time, all the 23 IITs of the country will come together for a mega research and development fair to be held from October 14-15, 2022 at the Indian Institute of Technology Delhi premises. The inaugural session will be graced by Union Minister for Education and Skill Development and Entrepreneurship Dharmendra Pradhan. A Steering Committee headed by Dr. Pawan Goenka, Chairman, BoG IIT Madras and Dr. BVR Mohan Reddy, Chairman, BoG IIT Hyderabad and IIT Roorkee; has been assigned to look after the event.

about the research and development fair

Named IInvenTiv, the event is aimed at creating holistic awareness around the research and innovation work being done by the IITs and seeking collaborative avenues among state universities and institutes, industry, and the IITs for better development and reach of the innovations at the grass roots level. It is being organized in commemoration of the 75th year of India's Independence in line with the Azadi ka Amrit Mahotsav initiative. It will showcase projects on diverse areas covering climate change, sustainability, smart city architecture, rural agriculture, affordable healthcare, drone technology, and so on.

The objective is to promote innovations in line with the Make in India, and Digital India initiatives, and seek solutions for better reach and scalability of innovations that benefit the masses across regions. The event would also host administrators and students from institutions from tier 2 and tier 3 cities for them to have a closer glimpse of the R&D ecosystem of IITs and in turn inculcate similar innovation-driven outlook towards developing projects of national interest. It would facilitate a comprehensive understanding of the requirements at the grass roots

level in key areas such as agriculture, rural development, sanitation, resource management etc., and would engage them to develop innovations that make a positive impact on a larger section of society.

Top Themes At Iinventiv

There are ten broad themes identified in focused areas for the event:

- Defence and aerospace
- Healthcare (including devices and digital health)
- Environment and Sustainability (including air, water, rivers)
- Clean Energy and Renewables (including Hydrogen and EV)
- Manufacturing (including smart, advanced and industry 4.0)
- AI/ML/Blockchain technologies (including quantum computing)
- Smart Cities and Infrastructure (including smart mobility)
- Communication Technologies (including education and 5G)
- Robotics, Sensors and Actuators
- Semiconductors, Flexible electronics and Nanotechnology

top projects to check out at the fair

A total of 75 projects brought out by 23 IITs are selected for the event, along with 6 showcase projects. Out of the six showcase projects, IIT Kanpur will lead a presentation on the ongoing R&D in drone technology and how diverse its utilities have become; IIT Bombay will lead a presentation on the *Bahubhaashak* project, which enables speech-to-speech translation, NPTEL, SWAYAM, MOOCs videos in vernacular languages, in-line with the vision of National Education Policy 2020; IIT Madras will lead a presentation on 5G Core and allied technologies; IIT Delhi will lead a presentation on the R&D in the broader areas of climate change, agriculture, rural technologies, sanitation etc; IIT Kharagpur will lead a presentation on affordable healthcare devices and technologies; and IIT Hyderabad will lead a presentation on the technological innovations in the electric vehicle (EV) sector.

The selected projects will be presented before the audience in designated booths during the 2-day mega event. Representatives from Confederation of Indian Industry (CII), Federation of Indian Chambers of Commerce and Industry (FICCI) and National Association of Software and Service Companies (NASSCOM), will be present at the event. The audience shall also include administrators and students from universities and colleges from small towns, global IIT alumni, faculties of various CFTIs, scientists from DRDO, ISRO, CSIR and ICAR, and so on.

The 2-day event will hold interactive as well as one-to-one sessions among the academia and industry representatives. Dr. Pawan Goenka, Chairman, BoG IIT Madras; Dr. BVR Mohan Reddy, Chairman, BoG IIT Hyderabad and IIT Roorkee; Dr. K. Radhakrishan, Chairman, Standing Committee for IIT Council and BoG IIT Kanpur; and all the directors of the IITs will be present among the other invitees.

https://www.indiatoday.in/education-today/news/story/23-iits-to-come-together-for-research-and-development-fair-iinventiv-2005918-2022-09-28

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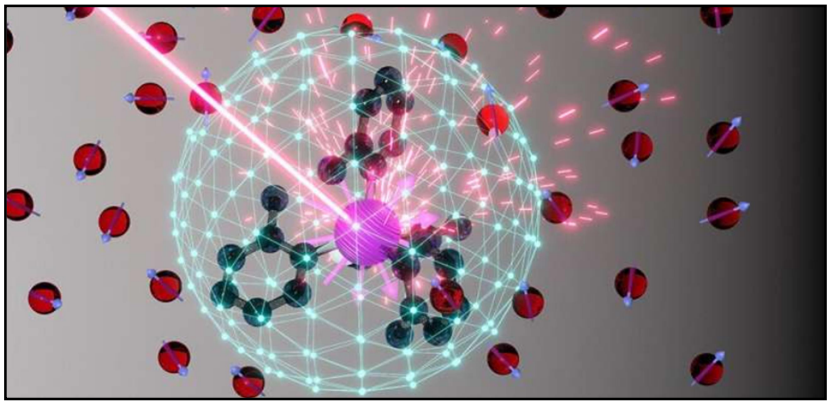
Engineering Robust and Scalable Molecular Qubits

The concept of "symmetry" is essential to fundamental physics: a crucial element in everything from subatomic particles to macroscopic crystals. Accordingly, a lack of symmetry—or asymmetry—can drastically affect the properties of a given system. Qubits, the quantum analog of computer bits for quantum computers, are extremely sensitive—the barest disturbance in a qubit system is enough for it to lose any quantum information it might have carried. Given this fragility, it seems intuitive that qubits would be most stable in a symmetric environment. However, for a certain type of qubit—a molecular qubit—the opposite is true.

Researchers from the University of Chicago's Pritzker School of Molecular Engineering (PME), the University of Glasgow, and the Massachusetts Institute of Technology have found that molecular qubits are much more stable in an asymmetric environment, expanding the possible applications of such qubits, especially as biological quantum sensors. "Molecular qubits are remarkably versatile, since they can be custom-engineered and placed in a variety of different environments," said David Awschalom, the Liew Family Professor in Molecular Engineering and Physics at UChicago, senior scientist at Argonne, director of the Chicago Quantum Exchange, and director of Q-NEXT, a Department of Energy Quantum Information Science Center. "Developing this method of stabilizing them opens new doors for potential applications of this emerging technology."



By placing molecular qubits in an asymmetric crystal array, Prof. David Awschalom and his team found that certain quantum states were much less sensitive to external magnetic fields

Using a system as a qubit requires it to have two quantum states that can correspond to "0" and "1," as in a classical computer. But quantum states are fragile, and will collapse if disturbed in any way. Quantum scientists have been pushing the limits of how long they can make a qubit hold a quantum state before collapsing, also known as "coherence time." Shielding qubits from as much external influence as possible is one way to try to increase their coherence time, and by placing the molecular qubits in an asymmetric crystal array, Awschalom and his team found that certain quantum states were much less sensitive to external magnetic fields, and thus had longer coherence times: 10 μs, compared to 2 μs for identical qubits in a symmetric crystal array.

Dan Laorenza, a chemistry graduate student at MIT who worked on the project, says the asymmetric environment provides "coherence protection" that could allow the qubits to keep their quantum information even if placed in more chaotic places. "We now understand a direct and reliable mechanism to improve coherence of molecular qubits in magnetically noisy environments," he said. "Most importantly, this asymmetric environment is easily translated to many other molecular systems, especially for molecules put in amorphous environments like those found in biology."

Qubit quantum sensors have myriad potential applications in biological systems, especially in medical contexts; but these systems are known for being unstructured and noisy, which makes maintaining the coherence of these qubit sensors a very difficult challenge. Learning why an asymmetric environment stabilizes molecular qubits against magnetic fields could lead to better sensors in these research fields.

https://phys.org/news/2022-09-robust-scalable-molecular-qubits.html

FINANCIAL EXPRESS
Read to Lead

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Cryogenic and Semi Cryogenic Engine: All You Want to Know

For India, cryogenic engines have been a dream envisioned in the mid-1980s, which owing to global politics, was marred. However, Indian Space Research Organisation (ISRO) understood the task and got to work on its cryogenic engines. After about two decades, the space agency achieved its dream. On Tuesday a new facility for Integrated Cryogenic Engine Manufacturing Facility (ICMF) which will cater to the cryogenic engine needs of the Indian Space Research Organisation (ISRO) has been inaugurated.

This facility is under state-owned Hindustan Aeronautics Limited's Aerospace Division which is already manufacturing liquid propellant tanks and launch vehicle structures for Indian rockets PSLV, GSLV MK-II, and GSLV Mk-III. Financial Express Online has already reported that it carries out stage integration for GSLV Mk-II. At the new facility there are 70 high-tech equipment and testing apparatus for manufacturing CE20 cryogenic engines and SE2000 cryogenic engines for Indian rockets. In the final stage of the GSLV Mk3 rocket the CE20 engines are used and in the SC-120 rocket stage, which is being developed, the SCE-2000 semi-cryogenic engine is expected to be used.

Deep Dive: Cryogenics

"Cryogenics is the outcome of the production of and behaviour of materials at very low temperatures. Ultra-cold temperatures change the chemical properties of materials. This has become an area of study for researchers who examine different materials as they transition from a gas to a liquid to a solid state. These studies have led to advances in our understanding of other materials and this has led to the creation of entirely new technologies and industries," explains Girish Linganna, Aerospace & Defence Analyst. According to him "Very cold temperatures are

not measured in degrees Fahrenheit or Celsius but Kelvins. Kelvins use the unit symbol K. Zero degrees Kelvin (0 K) which is theoretically coldest possible temperature. In Celsius, 0 K is -273.15 °C."

History

Based on the information available in the public domain, in 1877 Rasul Pictet and Louis Cailletet liquefied oxygen for the first time, and different methods were used in the process. Eventually, a new method of liquefying oxygen was discovered. And, at this point in history, it was now possible to liquidify oxygen at 90 K. And then liquid nitrogen was achieved at 77 K. In 1898, another breakthrough came when James DeWar liquefied hydrogen at 20 K. The last significant advance made in the in the cryogenics industry was in 1908. The physicist Heike Kamerling Onnes liquefied helium at 4.2 K and then 3.2 K. Cryogenics is has a variety of uses and is often used to produce cryogenic fields for rockets, in MRI machines that use liquid helium which require cryogenic cooling, storing large quantities of food, special effects fog, recycling, freezing blood and tissue samples, and even cooling superconductors.

Cryogenic Engines: The Indian Ordeal

Under Mikhail Gorbachev, the erstwhile Soviet Union Space Agency agreed to transfer cryogenic engines and technology to ISRO in 1991. At that time, only a select group of countries held the technology they guarded dearly. The US, Japan, Europe and China were against this transfer. The Soviet Union made an exception for India and claimed it to be for non-military use, for communication and weather satellites only. The US exercised all its might and invoked the Missile Technology Control Regime (MTCR), an association to stop the proliferation of missiles that could be used for mass destruction, to impose sanctions on the Soviet and Indian space agencies.

Soon after, the Soviet Union disintegrated, and the new government under Boris Yeltsin took control and his government was favoured the West. In 1993, Yeltsin arrived at a compromise after he met Bill Clinton that Russia would not transfer the technology; instead, it would sell seven cryogenic engines to India. India decided to fight back by developing its own cryogenic technology and the scientists conducted the first successful cryogenic engine test in 2003 and the first successful flight in 2014.

The Indian Space Program and Cryogenic Engines

ISRO has been spearheading the Indian space program since its inception and has built the capability to launch its satellites. And, ISRO has developed various launch vehicles (rockets) that carry different satellites to different orbits. Satellites revolve around the earth in a fixed path known as orbit. Depending upon the distance from the earth's surface, there are three types of orbits. The Low Earth Orbit (LEO) is about 160-2000 KM from Earth. Meanwhile, the Medium Earth Orbit MEO) is about 5000-10000 KM from Earth. Finally, the Geostationary Earth Orbit (GEO) is about 35800 KM from Earth. In GEO, the satellite's and the earth's rotation are the same, so it appears to be in a fixed location from the earth's surface.

The first few launch vehicles of ISRO, the SLV-3 and the ASLV could only reach the LEO. The PSLV-XL uses solid and liquid fuels instead of only solid fuels like the former two. GSLV Mk II and Mk III use three different kinds of fuels: solid, liquid and cryogenic. "A cryogenic engine/cryogenic stage is the last stage of space launch vehicles which makes use of cryogenics to store its fuel and oxidiser as liquids instead of gas. In space, there is a lack of air, including

oxygen, which means it is impossible to burn anything. To fix this, rockets carry their own oxygen, known as an oxidiser, mixed with fuel to burn it in space," adds Girish Linganna, Aerospace & Defence Analyst.

Unlike a cryogenic engine, a semi-cryogenic engine uses refined kerosene instead of liquid hydrogen. The liquid oxygen is used as an oxidiser. Adding, "The advantage of using a semi-cryogenic engine is that it requires refined kerosene, which is lighter than liquid fuel and can be stored at a normal temperature. One of the options before ISRO is to replace the liquid core (L110) engine of the GSLV MK III with a semi-cryogenic engine to boost the rocket's payload capacity from four to six tonnes."

https://www.financialexpress.com/defence/cryogenic-and-semi-cryogenic-engine-all-you-want-to-know/2694462/lite/?