October
2022

समाचार पत्रों से चयित अंश
Newspapers Clippings

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खंड : 47 अंक : 203 27 अक्टूबर 2022

Vol.: 47 Issue: 203 27 October 2022

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asianet newsable

Thu, 27 Oct 2022

DRDO's CBRN Water Purifier gives Soldiers on Frontlines 6000 Litres Per Hour

Defence Research and Development Organisation's Jodhpur-based defence laboratory has developed a chemical, biological, radiological and nuclear (CBRN) water purification system for the Indian Army and Indian Air Force to be deployed at high altitudes for the soldiers to have contamination-free water. The system has been developed keeping in mind the CBRN warfare and disaster scenarios. During warfare or any disaster, the water bodies get contaminated with radioactive dust, dispersed chemical and biological agents, and toxins.

"Such water, if ingested, leads to several health issues and even death," Santosh Bhati, Technical Officer at Defence Lab Jodhpur (DLJ) told Asianet News English. It should be noted that the DLJ has developed two types of CBRN water purification systems --- the CBRN WPS Mk 1 and the CBRN WPS Mk 2. The difference between the two systems is the Mk-1 is meant for deployment in deserts and plains and cannot operate below one-degree temperature. At the same time, the Mk-2 is built for high altitudes and operate in sub-zero degree.

DRDO has so far supplied 10 CBRN WPS Mk-1 systems to the Indian Army, which are in use. The DRDO's lab has also developed two prototypes of the Mk-2, of which one is deployed in Tangtse in the Ladakh region under the Indian Army's XIV Corps or Fire and Fury Corps. According to a DRDO scientist, the need to have the Mk-2 system was felt after the troops of India and China got engaged in a border standoff over two years ago in eastern Ladakh. In such a scenario, the adversary could try to contaminate the water bodies, which would be detrimental to the troops deployed on the frontline. "For this, a system like the CBRN WPS Mk-2 becomes an advantage for the forces," he said.

The Mk-2 system is operable in temperatures ranging between minus 20 degrees to 55 degrees and can purify contaminated water for drinking purposes. "If the water is contaminated with nuclear particles or dust, it can purify 2500 litres of water in an hour. Else it can purify 6000 litres per hour," Santosh Bhati said. The CBRN WPS Mk-2 was tested at Pangong Tso in eastern Ladakh, which is situated at an altitude of over 14,800 feet. Indian Army and Indian Air Force have placed an order for the procurement of 54 such systems. However, they need a total of 244 systems.

https://newsable.asianetnews.com/india-defence/drdo-cbrn-water-purifier-gives-soldiers-on-frontlines-6000-litres-per-hour-rke9v5

asianet newsable

Wed, 26 Oct 2022

मेड इन इंडिया: 2028 तक भारत बना लेगा ट्विन इंजन डेक आधारित फाइटर जेट, लेगा मिग-29 की जगह

रक्षा सेवा के क्षेत्र में भी भारत अब आत्मनिर्भरता की ओर तेजी से बढ़ रहा है।सब कुछ ठीक रहा तो 2028 तक भारत का अपना ट्विन-इंजन डेक-आधारित फाइटर जेट प्रोटोटाइप तैयार हो जाएगा। यह भारतीय नौसेना के मिग-29K की जगह लेगा। TEDBF विमान के 2031 या 2032 तक भारतीय नौसेना में शामिल होने की पूरी उम्मीद है। रक्षा अनुसंधान और विकास संगठन के एक वरिष्ठ अधिकारी ने एशियानेट न्यूज इंग्लिश को बताया कि ट्विन-इंजन डेक-आधारित फाइटर (TEDBF) की प्रारंभिक डिजाइन समीक्षा अगले साल मार्च तक पूरी हो जाएगी। भारत का पहला प्रोटोटाइप 2028 तक तैयार किया जाएगा।

DRDO जून 2023 तक प्रधानमंत्री नरेंद्र मोदी की अध्यक्षता वाली सुरक्षा की कैबिनेट समिति से मंजूरी की भी उम्मीद भी कर रहा है। डीआरडीओ के परियोजना निदेशक पी थंगावेल ने कहा कि लेआउट डिजाइन का काम लगभग खत्म हो गया है। हम सुपरसोनिक विमान के प्रदर्शन का मूल्यांकन करने की तैयारी कर रहे हैं। हम सिस्टम डिजाइन के लिए उपलब्ध फंड के साथ यह काम पूरा कर रहे हैं। कहा कि संभवतः मार्च तक हम प्रारंभिक डिजाइन समीक्षा करेंगे। पीडीआर के बाद आगे का काम किया जाएगा। उन्होंने कहा कि हम 2023 के मध्य तक सीसीएस मंजूरी की उम्मीद कर रहे हैं। तब हमें मौजूदा परिदृश्य में पहले प्रोटोटाइप को तैयार करने के लिए 4 से 4.5 साल लग सकते हैं। ऐसा इसलिए है क्योंकि नौसेना का डिजाइन कुछ अलग तरीके का होता है।

थंगावेन ने कहा कि एक बार प्रोटोटाइप आने के बाद भारतीय नौसेना एचएएल के साथ इसके प्रोडक्शन की शुरूआत करेगी। यह मिग-29 की जगह लेगा क्योंकि मिग-29 अब पुराना हो गया है। 2031 या 2032 तक टीईडीबीएफ विमान को भारतीय नौसेना में शामिल किया जाएगा। चूंकि TEDBF को विशेष रूप से भारतीय नौसेना के लिए डिजाइन किया जा रहा है इसलिए इसके पंखों को मोड़ा जा सकता है। टीईडीबीएफ को आईएनएस विक्रमादित्य और आईएनएस विक्रांत पर तैनात किया जाएगा। 16.3 मीटर लंबा यह फाइटर भी मल्टी रोल फाइटर होगा। इसकी भूमिका लड़ाकू हवाई गश्त, डेक लॉन्च इंटरसेप्शन, एयर-टू-एयर कॉम्बैट, एंटी-शिप स्ट्राइक, मैरीटाइम स्ट्राइक, लैंड अटैक स्ट्राइक, एस्कॉर्ट जैमिंग और ब्वॉय रिफाइवलिंग शामिल है।

भारत के स्वदेशी विमानवाहक पोत आईएनएस विक्रांत के शुरू होने से पहले भारतीय नौसेना के वाइस चीफ वाइस एडमिरल एसएन घोरमडे ने कहा था कि नौसेना राफेल (एम) और एफ/ए-18 सुपर हॉर्नेट ब्लॉक III लड़ाकू विमानों को बेड़े में शामिल करने की तैयारी कर रही है। फ्रांसीसी राफेल (एम) और अमेरिका निर्मित एफ/ए-18 सुपर हॉर्नेट ब्लॉक III ने महीनों पहले आईएनएस विक्रांत पर सफलतापूर्वक परीक्षण किया था। भारतीय नौसेना के एक अधिकारी के अनुसार विमान का चयन करने के लिए मूल्यांकन किया जा रहा है और हमें उम्मीद है कि निर्णय जल्द से जल्द लिया जाएगा।

https://hindi.asianetnews.com/national-news/india-defence-made-in-india-twin-engine-deck-based-fighter-jet-prototype-by-2028-mda-rkcn3r

asianet newsable

Wed, 26 Oct 2022

India's Own Twin-Engine Deck-Based Fighter Jet Prototype by 2028

The preliminary design review of the Twin-Engine Deck-Based Fighter (TEDBF) will be completed by March next year, and the first prototype will be rolled out by 2028, a senior Defence Research and Development Organisation official told Asianet News English. The DRDO is also expecting clearance from the Cabinet Committee on Security headed by Prime Minister Narendra Modi by June 2023. P Thangavel, project director at DRDO, said: "The layout design is almost over. We are going with high-speed performance to evaluate supersonic aircraft performance. We are going ahead with the available fund for system design. Probably by March, we will have a preliminary design review."

"After PDR, drawings will be made. We expect the CCS clearance by mid-2023. Then we may take 4-4.5 years for first prototype in the current scenario. That's because the naval design is something different." "Once the prototype comes, the Indian Navy will place a production order with the HAL. It would be the replacement of MiG-29K as it is getting obsolete. By 2031 or 2032, the TEDBF aircraft will be inducted into the Indian Navy," Thangavel added. Since the TEDBF is being specifically designed for the Indian Navy, its wings can be folded and modified for catapult launch.

With the ability to reach Mach 1.6 speeds, the TEDBF fighters would be deployed on INS Vikramaditya and INS Vikrant. The fighter, which will be 16.3 meters in length, will also be a multi-role fighter. The roles include combat air patrol, deck launch interception, air-to-air combat, anti-ship strike, maritime strike, land attack strike, escort jamming and buddy refuelling. It will be fitted with Advanced Short-Range Air-to-air Missile (ASRAM) and Astra Beyond Visual Range (BVR) air-to-air missile systems. It will have propulsive thrust from two GE F414 INS6 engines.

Ahead of the commissioning of India's indigenous aircraft carrier -- INS Vikrant -- on September 2, Indian Navy Vice Chief Vice Admiral SN Ghormade had stated that the Navy is looking at Rafale (M) and F/A-18 Super Hornet Block III fighter aircraft for 'interim arrangements'. The

French-origin Rafale (M) and the US-made F/A-18 Super Hornet Block III had successfully conducted trials on INS Vikrant months ago. As per an Indian Navy official, "Evaluation is being done to select the aircraft, and we hope that the decision will be taken earliest." Currently, the Indian Navy operates with Russian-origin MiG-29K.

https://newsable.asianetnews.com/india-defence/made-in-india-twin-engine-deck-based-fighter-jet-prototype-by-2028-rkckv1

The Sentinel
of this land, for its people

Thu, 27 Oct 2022

Tezpur University Researchers Win Coveted DRDO Award

A team from Tezpur University comprising Amlan J. Kalita, Dr. Nayan M. Kakoty, Lakhyajit Gohain and Krishna Sharma secured 2nd position in the Dare to Dream Innovation Contest 3.0 under the theme Cognitive Technologies for Sensing and Adaptation organized by Defense Research and Development Organization, Government of India. The award was given by the Defence Minister, Government of India on October 20 in the DefExpo 2022, Gujrat. The award comprised of citation and an amount Rs. 4,00,000. Apart from individual recognitions, projects under Dr. Kakoty have been awarded IEEE Best Student Project award for two consecutive years 2012 and 2013, and SK Mukharjee Gold Medal during Student Research Convention 2013 organized by Association of Indian Universities

https://www.sentinelassam.com/north-east-india-news/assam-news/tezpur-university-researchers-win-coveted-drdo-award-620173

DefenceNews

Defence Strategic : National/International

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Thu, 27 Oct 2022

Defence Minister Rajnath Singh, Army Chief Gen Manoj Pandey to Attend Infantry day Anniversary Event in J&K Today

The Army landed at the airfield after the 'instrument of accession' was signed on October 26, 1947, between the then Maharaja of Jammu and Kashmir Hari Singh and the Union of India

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■ Rajnath Singh and Army Chief Gen Manoj Pande will attend an event in J&K to mark the 75th anniversary of Infantry Day

■ Infantry Day is celebrated to commemorate the arrival of Indian Army at Budgam airfield on October 27, 1947

■ The Budgam landings were the first military operations of Independent India,

Defence Minister Rajnath Singh and Army Chief Gen Manoj Pande will attend an event in Jammu and Kashmir on Thursday to mark the 75th anniversary of Infantry Day, officials said. Infantry Day is celebrated to commemorate the arrival of Indian Army at Budgam airfield on October 27, 1947, to protect Jammu and Kashmir from Pakistani forces. It was the first military operation of Independent India.

The Army landed at the airfield after the 'instrument of accession' was signed on October 26, 1947, between the then Maharaja of Jammu and Kashmir Hari Singh and the Union of India. Some of the key scenes of the historic Budgam landings are scheduled to be reenacted, among other events planned to be held on Thursday to mark the landmark occasion. In New Delhi, Chief of Defence Staff Gen Anil Chauhan will lay a wreath at the National War Memorial to commemorate the historic day, he said.

The reenactment of the historic event (Budgam landings) to be organised at Old Air Field, Srinagar, is to pay obeisance to the brave soldiers and people of Jammu and Kashmir who laid down their lives, and also to honour the next of kin of war heroes who participated in the 1947-48 war, another official said. The Budgam landings were the first military operations of Independent India, and Thursday will mark the 75th anniversary of the key event. Under command of Lieutenant Colonel Dewan Ranjit Rai, who later laid down his life at Baramulla, changed the course of the war, wherein people and soldiers of State Forces of Jammu and Kashmir and the Indian Army fought alongside valiantly, to evict Pakistani forces, driving them out of most of Jammu and Kashmir till ceasefire on January 5, 1949, the Army had earlier said.

https://www.news9live.com/state/jammu-and-kashmir/defence-minister-rajnath-singh-army-chief-gen-manoj-pandey-to-attend-infantry-day-anniversary-event-in-jk-today-204314

The EurAsian Times

Thu, 27 Oct 2022

LCA Tejas & BrahMos for Malaysia? Can India Pull off The Biggest Defense Deal in its Short History With 'Make in India' Weapons?

By Sakshi Tiwar

Until a month ago, South Korea appeared ahead of India in the bid to supply Light Combat Aircraft (LCA) to Malaysia. However, banking on its "super weapon," can India

catapult itself back into the race with its indigenously developed LCA Tejas in breakneck competition with the South Korean FA-50?

On the sidelines of the recently concluded DefExpo 2022 in Gandhinagar, some anonymous defense sources cited by Financial Express Online informed the publication that Malaysia had expressed interest in the BrahMos Next Generation (NG) missile. The next-generation missile is a smaller, lighter, and stealthier version of the existing BrahMos. Earlier in January, the Philippines became the first-ever customer of the supersonic cruise missile as it signed a deal worth $375 million to purchase ground-based BrahMos missile systems (and not the BrahMos-NG). According to the report, Malaysia was keen on the BrahMos NG missile as it could be integrated into the Su-30 fighter aircraft that the Royal Malaysian Air Force (RMAF) already operates.

BrahMos NG is more compact and portable, and it can be mounted on an array of different platforms. It is anticipated to be 50% lighter, three meters shorter, and with the same Mach 3.5 speed and 290-kilometer range of BrahMos. Due to its lighter weight and smaller dimensions, the BrahMos NG can be carried by various platforms, such as conventional submarines and fighter aircraft. This would allow Kuala Lumpur to use the missile on its fighter fleet and submarines. EurAsian Times recently reported that the BrahMos NG missile qualification trials are anticipated to start in early 2024. BrahMos Aerospace will conduct the design assessment in NPO Mashinostroyeniya in Moscow. CEO of BrahMos Aerospace Atul Rane said the company was negotiating prospective sales of fresh orders with nations like Indonesia, Vietnam, and Malaysia. While the missile would boost India's missile export and conform to its goals if a deal goes through, it will also boost Malaysia's combat capability. However, there's a third and more specific feat that any such sale might be able to accomplish. The missile could increase the chances of India's LCA Tejas sale to Malaysia and make way for India's LCA debut in the foreign market.

Will The BrahMos Make A Push For Tejas?

The competition for the order of 18 Light Combat Aircraft for the Malaysian Air Force has been down to two contenders: the Indian LCA Tejas and the Korean FA-50. Media reports in September indicated that Malaysia had decided to go the South Korean way, stating that the negotiation between Malaysia and South Korea was in its final stage. However, no such deal has been finalized yet. So, it could be worth speculating whether India is offering the BrahMos NG missile to incentivize Malaysia's purchase of LCA Tejas.

BrahMos NG missile would not only be compatible with the Su-30 operated by RMAF, but it would also be easily integrated on the LCA Tejas, as noted by Praveen Pathak, Chief General Manager (Marketing Promotions and Export) BrahMos Aerospace International Maritime at the Defense Show (IMDS). BrahMos NG has a lower radar cross-section (RCS) than the existing BrahMos missile, making it stealthier and challenging for air defense systems to locate and engage the target. This would essentially prove to be a shot in the arm for the Malaysian Air Force, which is also faced with the challenge of an expansionist China.

China claims the whole of the South China Sea as its territory, which includes the 200 nautical miles (370.4 kilometers) Exclusive Economic Zone (EEZ) of Malaysia. In June last year, 16 PLA Air Force (PLAAF) aircraft flew over waters within 60 nautical miles (110km) of Sarawak, in response to which the RMAF scrambled fighter jets from its Labuan Air Base. Earlier, India had offered a package deal to set up a maintenance, repair, and overhaul (MRO) facility in

Malaysia for its fleet of Russian-made Sukhoi Su-30 fighter jets. At the time, it was seen as a move that would bolster the chance of LCA Tejas export to the South East Asian country, but eventually, reports indicated that South Korean FA-50 was far ahead in the race.

Philippines-based military analyst Miguel Miranda said, "Well, we don't know if the BrahMos sale to Malaysia is a done deal. Arms exports are sometimes delicate transactions decided by politicians. However, aside from the possibility, the Su-30MK can be armed with an air-launched BrahMos, just like LCA Tejas. But it's good to remember military spending in ASEAN won't grow dramatically due to the medium-term effects of the pandemic. The BrahMos remains India's most noteworthy military product, however." With a package deal already in place and a new iconic missile on offer, India could be looking to secure a brownie point against its Asian competitor.

https://eurasiantimes.com/deadly-combo-of-lca-tejas-brahmos-missile-for-malaysia-rmaf/?amp

Wed, 26 Oct 2022

Defence Diary: DefExpo Showed India's Potential as Exporter but Policy Play Needs More Push

By Amrita Nayak Dutta

The DefExpo-2022 - India's largest defence exhibition held in Gujarat's Gandhinagar last week - brought to the fore an impressive number of Indian companies showcasing their offerings spanning new technology as well as modern platforms and equipment in use with the defence services. The massive event saw 1,340 Indian companies, comprising private and state-owned, established and startups, participated in the 12th edition of the defence ministry's biennial event.

This edition of the exhibition was open to participation from either purely Indian companies, Indian subsidiaries of foreign original equipment manufacturers (OEMs), divisions of companies registered in India or those foreign firms having joint ventures with Indian companies. DefExpo-2022 underlined the twin ambitions of India in the defence sector—one is to be self-sustaining by full indigenisation of the defence equipment, platforms and weapon systems and new technologies sought by the country's defence forces, and the other is to ramp up defence exports to reach a target goal of $5billion by 2025, starting with countries in Africa and the Indian Ocean Region. Despite their offerings and promises, a few key policy-issues linger on, putting a hindrance to India realising its twin goals. I'll make three points here.

Export Opportunities

Our reports from last week had highlighted the steps and timelines drawn out by Indian firms to meeting some of the critical requirements for the Indian Armed Forces. For instance, Prime Minister Narendra Modi unveiled the Hindustan Aeronautics Limited (HAL)-manufactured HTT-40 basic trainer aircraft and is close to getting certification for the intermediate jet trainer. An order was placed with HAL for 70 HTT-40 for Rs 6,800 crore by the Indian Air Force. Then there were BrahMos NG (next generation) supersonic cruise missiles developed by India and the Light Combat Aircraft Tejas Mk2 whose export potential is already being explored with several

countries showing interest in it. There is also the fifth generation Advanced Medium Combat Aircraft (AMCA) for the IAF and the Twin Engine Deck Based Fighter (TEDBF) for the Navy under development which when developed will fill up critical gaps in the number of fighter squadrons of the IAF and in the Navy. A number of indigenous private firms—some of them iDEX winners—are developing a range of unmanned aerial vehicles among other new innovations in automation solutions as well as in upgrades for major defence platforms in use with the services. The services are also coming up with a range of innovations for the soldiers, as well as for export, such as the Navy's combat management system.

Good Policies But No Implementation

To meet its twin objectives, the defence ministry has brought about several policy measures in the last few years, but there has been a little follow-up on some of critical ones, which directly affect defence exports and India's self-reliance plans. The much-touted strategic partnership model for the defence sector cleared by the Defence Acquisition Council in 2017, for instance, has failed to kick off in the last five years. The policy, according to a government statement, was aimed at institutionalising a transparent, objective and functional mechanism to encourage broader participation of the private sector, in addition to defence PSUs in the manufacture of defence platforms and equipment such as aircraft, submarines, helicopters and armoured vehicles.

Aside from enhancing competition and increasing efficiencies, the idea was also to create an industrial ecosystem and ensuring development of a wider skill base, which would encourage innovation leading to bigger self-reliance. Reports, however, say not even one project has taken off under this model in five years after the policy was cleared. Even then, there lacks a clarity on what has been done so far to encourage private participation under this model which could lead to India developing an expertise in manufacturing complex platforms for other markets. The second remains an effort to encourage and promote defence research in a bigger way, which may or may not yield immediate results, but is critical in the long run to develop niche technologies to enable India to tap the global defence market and stand out in it. There have been some thoughts in the defence establishment towards this, as evident in finance minister Nirmala Sitharaman's budget speech for 2022-23 in February this year, where she announced the opening up of defence research and development to the private industry, start-ups and academia and earmarking 25% of the defence R&D budget for the sector.

However, eight months down the line, this still lacks a roadmap or the modalities detailing how exactly the private sector would make use of this move to engage in adequate research. With defence industrial corridors being set up in Uttar Pradesh and Tamil Nadu, and also the launch of the defence testing infrastructure scheme last year to boost domestic defence and aerospace manufacturing, it is important for the defence establishment to also latch on to the takeaways from the Centre's National Logistics Policy released last month. The policy aims to lower the cost of logistics from the existing 13-14% and bring it on a par with other developed countries. Reducing logistics cost would bring down production expenses of defence equipment, weapon systems and platforms, which India aspires to manufacture indigenously—the factor that will help India clinch the deal with global customers.

https://www.news18.com/news/india/defence-diary-defexpo-showed-indias-potential-as-exporter-but-policy-play-needs-more-push-6244585.html

The EurAsian Times

Thu, 27 Oct 2022

India Unveils Zorawar Light Tank Concept at DefExpo; Can Delhi Overlook Russian Offer of Amphibious Tanks Amid China Tensions?

By Sakshi Tiwari

After a challenging experience deploying heavy Main Battle Tanks (MBTs) in the Eastern Ladakh region during a stand-off with China, the Indian Army is prioritizing the procurement of the indigenous Indian light tank codenamed 'Zorawar.'

The Indian Defense Research and Development Organization (DRDO) displayed a scale model of the Zorawar light tank at the Defexpo 2022, held in Gujarat from October 18 to 22. The tank is being developed jointly by DRDO and Larsen & Toubro (L&T). On September 16, senior executive vice-president for Defense Jayant D Patil stated that the company had been chosen as a development partner. However, he added that L&T could not guarantee that it would play a part in the manufacturing of the tank, despite the company's involvement in the platform's development. Project Zorawar is in a very nascent stage as of now.

The Indian Army is accelerating the acquisition process of the indigenous Indian light tank after its experience of deploying armor at an altitude of 15,000 ft. to outmaneuver the movement of Chinese forces. However, the first Request for Information (RFI) issued for a light tank goes back over a decade. It was in 2009 that the Indian Army first projected a need for a Light Tank when an RFI was initiated to procure 300 such tanks. The armor equipment profile is one of the most critical variables in determining the operational capacity of land forces. While China has introduced a significant number of cutting-edge medium and light tanks, as demonstrated by recent experiences along the northern border, India still has to make do with heavy tanks acquired from Russia.

For instance, India deployed a fleet of T-90 tanks, which weigh roughly 46 tons, near the site of conflict in eastern Ladakh, in addition to the previously deployed 45-ton T-72 tanks. However, these big tanks suit terrain with steep slopes and high altitudes. In contrast to Indian armor deployment, China's ZTQ-15 light tanks easily zipped through, while Indian armored battalions encountered difficulty moving their hefty T-72s across passes up to 17,500 feet in elevation. The Indian efforts to develop light tanks are driven by the operational challenges of using large MBTs in mountain warfare. Project Zorawar is part of the overarching modernization undertaken by the armored corps and mechanized infantry. In September this year, an unnamed defense official told The Hindu, "It will have equal firepower as the present tank, including missile firing. The power-to-weight ratio will make it very agile."

Zorawar Has Competition

Modi government announced the development of light tanks for the Indian Army on March 3, 2022, under the Make-I category of the 2020 Defense Procurement Procedure (DPP). The Ministry of Defense's Directorate General of Mechanized Forces issued a Request for

Information (RFI) in April 2021 for 350 light tanks in the 25-ton weight category. However, instead of importing light tanks, it was later announced that the country wanted to develop a light tank of its own. Once the decision was taken, L&T was chosen as the industry partner. Zorawar is built to function across various settings, including island territories, high-altitude regions, and marginal terrain. According to officials, it would have specialized technology like Artificial Intelligence (AI), drone integration, active defense systems, and a high level of situational awareness.

The tank will also be highly transportable for quick deployment to meet operational circumstances. The development of a tank indigenously has also been influenced by the trouble in defense supply chains due to the Russian-Ukraine conflict. Russia is the biggest defense supplier to India, and both the MBTs operated by the Indian Army are of Russian origin. That being said, while developing an indigenous Light Tank on the lines of fighter jets like LCA Tejas is ambitious, there are other lucrative offers made to the Indian Army from foreign partners. One of the leading contenders for India's Light Tank contract is Russia's Sprut SDMI, which is an 18-ton tank with a 450-hp engine supporting a 125mm main gun. The main advantage that Sprut offers is that it can use all the ammunition produced in India for T-72M1 and T-90S tanks. Further, Russia has strengthened its offer by providing Transfer of Technology (ToT) and production assistance.

Besides Zorawar and Sprut SDMI, another option available to India is the yet-to-be-developed South Korea's Hanwha Defense's K21-105. It is expected to be a 25-ton tank with a 750-hp power pack and would be built in India by L&T. Its turret would be Belgian. Going ahead with Zorawar could be a time taking process as the prototype won't be available until 2023, and the tank is still in its concept phase. Operational necessity may force India to enlist foreign assistance to meet its urgent light tank needs, i.e., for the entire system or individual parts like the turret, engine, and transmission. Despite major issues with indigenization, it seems India will not give up on the DRDO's Zorawar light tank project. This is especially significant as the current Indian government led by Prime Minister Narendra Modi is pushing for indigenization in the defense sector which will not only fulfill its own needs but also open an avenue for export.

https://eurasiantimes.com/india-unveils-zorawar-light-tank-concept-at-defexpo-can-delhi-overlook-russian-offer-of-amphibious-tanks-amid-china-tensions/?amp

The Tribune

Wed, 26 Oct 2022

IIT-Ropar to Have Defence Research Unit

The Indian Institute of Technology (IIT) in Ropar is coming up with the National Research Centre for Defence Research and Security. This will be the first-of-its-kind centre for which an MoU has been signed with the UK-India Business Council (UKIBC) on behalf of the Aerospace and Defence Industry Group from the UK. The MoU was signed during the recently concluded DefExpo in Gandhinagar, Gujarat. The UKIBC and the IIT-Ropar have agreed to formally establish their relationship and, in doing so, provide a framework for further collaborative activities between the two institutions.

The MoU will allow collaboration in the field of innovation and research, especially in the domain of aerospace and defence. It would include all aspects related to aerospace, maritime, land, homeland security, space, cybersecurity and any other aspect impinging upon security in general. Priority will be on developing programmes in tune with the resource and interest levels of industry members of the UKIBC to engage with the IIT. The UKIBC will extend invitations to its member companies to speak at IIT-Ropar events.

https://www.tribuneindia.com/news/punjab/iit-ropar-to-have-defence-research-unit-444678

THE ECONOMIC TIMES

Wed, 26 Oct 2022

Nukes Not an Option, Says India After Russian Defence Minister Dials Rajnath Singh

India has made its position clear that the nuclear option should not be resorted to by any side in the ongoing Russia-Ukraine conflict as it goes against the basic tenets of humanity. In a telephonic conversation with his Russian counterpart, Defence Minister Rajnath Singh reiterated India's stance that dialogue and diplomacy should be used for an early resolution of the conflict. Russian defence minister Sergei Shoigu called Singh on Wednesday and briefed him on the current situation in Ukraine. During his conversation, Shoigu raised concerns that the Ukrainian side would use a 'dirty bomb' - a conventional bomb that spews radioactive material over a large area - as the situation deteriorates.

Singh, who has had several conversations with the Russian leadership on the Ukrainian crisis, discussed bilateral defence cooperation as well as the deteriorating situation in Ukraine. "Rajnath Singh reiterated India's position on the need to pursue the path of dialogue and diplomacy for an early resolution of the conflict. He pointed out that the nuclear option should not be resorted to by any side as the prospect of the usage of nuclear or radiological weapons goes against the basic tenets of humanity," defence ministry officials said.

The Russian government said that "General Sergei Shoigu conveyed to the Indian counterpart his concerns about possible provocations by Ukraine with the use of a 'dirty bomb'". The Russian side has been making claims of a possible dirty bomb strike by Ukraine for the past few days and have conveyed the message to the US, France and the UK as well. Senior Russian officials have claimed that a dirty bomb is being assembled by Russia that would be used in the theatre of conflict. Ukraine has refuted these allegations and has accused Russia of attempting a 'false flag' operation that would give it an excuse of using tactical nuclear bombs on its troops in the contested area. Talks of a dirty bomb and tactical nukes have raised concerns across the world, with the threat of a possible nuclear conflict at its highest level since the end of the cold war. *https://economictimes.indiatimes.com/news/defence/nuclear-option-should-not-be-resorted-to-by-any-side-rajnath-singh-to-russian-defence-minister/articleshow/95104215.cms*

ThePrint

Wed, 26 Oct 2022

‘Global Interest in India-Modified M4’ — South African Defence Firm Wants to Manufacture in India

South African defence major, Paramount Group — which has a tie-up with India’s Kalyani Group for the joint production of M4 armoured vehicles for the Army here — wants to expand its Indian manufacturing presence to cater to its global clients, its founder Ivor Ichikowitz told ThePrint. Paramount is in talks with Kalyani Group to expand operations as many other countries have evinced interest in the India-specific modified M4 vehicles.

“The volume demand is huge. Speed of delivery, quality and certification are huge factors in business. We are doubling down on our collaboration with the Kalyani Group to manufacture a range of products which will be exported to our international clients,” Ichikowitz said in an interview on the sidelines of the DefExpo 2022 held earlier this month in Gandhinagar, Gujarat. The Paramount group is an aerospace and defence major that was set up in South Africa in 1994 focusing on African governments, a region India is keen on.

The group had entered the Indian market in 2021 after the Army selected its M4 armoured and mine-protected vehicle to meet its requirement for wheeled armoured vehicles that can transport troops faster and is capable of operating in high-altitude regions. The vehicle was ordered through Bharat Forge, part of the Kalyani Group, and underwent several India-specific changes which makes the variant the most capable M4 built till now. As reported by ThePrint, while the initial order was for about 27 of these vehicles, the Army has placed multiple orders with the latest one to be integrated with the Israeli Spike anti-tank guided missile (ATGM) system.

“We are trying to make India a primary factor for Paramount’s global supply chain,” said Ichikowitz, adding that countries in Central Asia, Africa and the Middle East have shown an interest in the Indian specification M4, the latest generation variant. With Paramount having an outstanding order book of close to a Billion US Dollars, its founder added, “We believe that, potentially into the future, a third of our order book could be sourced from the Indian manufacturing.” The Paramount Group, Ichikowitz said, has a portfolio of over 70 products, and armoured vehicles is what he is focusing on in India.

‘Found perfect partner in Kalyani Group’

Welcoming the Indian government’s thrust on creating a defence ecosystem, Ichikowitz said that India will emerge as one of the big defence exporters in the world. “Had you asked me three-four years ago whether we were looking at India as a potential manufacturing hub, I would not have been that confident. So much has changed and we have found in Kalyani Group a perfect partner,” he said. The Kalyani M4, which is being built at the company’s Pune plant, is a multi-role platform capable of carrying a total of 10 soldiers to meet the requirements of the armed forces for quick mobility in rough terrain and in areas affected by mine and improvised explosive devices (IED) threats. It has ballistic and blast protection from up to 50 kg TNT side blast, or IED or roadside bombs due to its design that is built on a flat-floor monocoque hull. With a thrust speed of 140 km per hour, the vehicle has a payload of 2.3 tonnes and an operating range of about 800 km.

Sources in the Kalyani Group said Bharat Forge has been able to carry out indigenisation of nearly 95 per cent of the vehicles, with only 5 per cent being imported from outside. While its Pune plant has the capacity to build 40 vehicles per year, the firm plans to ramp it up to 100 soon, not limited to just the M4s.

https://theprint.in/defence/global-interest-in-india-modified-m4-south-african-defence-firm-wants-to-manufacture-in-india/1182688/

Thu, 27 Oct 2022

US: Pentagon Tests Dozen Hypersonic Weapons to Develop New Defence Class, Calls it Successful

To boost the defence mechanism, the Pentagon in its recent statement on Wednesday (October 26) said that the US Navy and Army recently blasted off a rocket in Virginia to test a few hypersonic weapons. The Navy in its statement said, "Sandia National Laboratories ran the test from NASA's Wallops Flight Facility in Virginia, which evaluated hypersonic weapon communications and navigation equipment as well as advanced materials that can withstand the heat in a "realistic hypersonic environment," Reuters reported. The test was done to validate aspects of the Navy's Conventional Prompt Strike (CPS) and the Army's Long Range Hypersonic Weapons(LHRW).

Calling the experiment a success, the Pentagon said that this experiment will help the country to develop a new class of defence weapons. For this test, the Pentagon used a sounding rocket, a bit smaller and much more affordable than the original one. The vehicle filled din gap between ground testing and full-system flight testing. Unlike its other air-breathing hypersonic weapons, the glide bodies use scramjet engine technology and high speed to compress air force combustion to maintain hypersonic speeds. With global threats and invasions increasing, the United States along with its rivals focusing on developing hypersonic missiles that will soon take over the traditional means of weapons. For the US, companies like Lockheed Martin Corp and Raytheon Technologies Corp are working to develop hypersonic missiles.

https://www.wionews.com/world/us-pentagon-tests-dozen-hypersonic-weapons-to-develop-new-defence-class-calls-it-successful-528724

Wed, 26 Oct 2022

Australian Defence Force Troops to Train Ukrainian Soldiers in the UK

Up to 70 Australian defence force personnel will be deployed to the UK to train Ukrainian troops in the latest increase in Australia's support for Kyiv. The Albanese government announced the decision late on Wednesday while emphasising that the ADF members would not be entering Ukrainian territory. It also said it would provide Ukraine with 30 more Bushmaster protected

mobility vehicles, bringing to 90 the total number promised since Russia's invasion. The government has been signalling for months that Australia might join other countries in training Ukrainian troops as part of longer term assistance, but has not confirmed the details until now. It says up to 70 ADF members will fly to the UK in January to join Operation Interflex, a mission that also involves personnel from other countries including New Zealand, Canada, Sweden and Finland. Ukrainian troops, including new recruits, have been travelling to the UK for training under this program.

The deputy prime minister and defence minister, Richard Marles, said it was increasingly clear that Ukraine faced "a protracted conflict". "Our soldiers will be part of a large training program in the United Kingdom to help prepare their Ukrainian mates for their struggle against Russia's unwarranted and unlawful aggression," he said. Marles said the Australian-provided Bushmaster vehicles had already been "used extensively by the Ukrainian Armed Forces, with more requested by the Ukrainian president, minister for defence, and the ambassador". The total value of Australia's support to Ukraine now stands at $655m, including $475m in military assistance.

The announcement comes a day after the Albanese government's first budget allocated an extra $213m over five years to provide help to Ukraine. This amount covers funding added since the Coalition's final pre-election budget. It is understood the cost of the additional military assistance announced late on Wednesday will be absorbed by the defence department. Perviously announced aid includes armoured vehicles, anti-armour weapons, de-mining equipment to remove explosive ordnance, unmanned aerial systems, decoys and remotely operated vehicles. But it remains unclear exactly how many vehicles have arrived in Ukraine so far, with the government citing the need for operational security on delivery dates.

The prime minister, Anthony Albanese, said Australia would "continue to stand up for freedom and democracy" and was unequivocal in condemning the Russian president, Vladimir Putin. "This is a not just about Ukraine's sovereignty," Albanese said. "The brave people of Ukraine are defending international law, rules and norms." While Australian politicians have largely been united in voicing support for Ukraine as it seeks to regain territory seized by Russia, there have been exceptions. Gerard Rennick, a Liberal National party backbencher, made a speech to the Senate on Tuesday that was sharply at odds with the Coalition's position. Rennick denounced "the stupidity of the Biden-Nato administration" and accused the US of "overthrowing" democracy in Ukraine eight years ago. He cited the stances of US commentators Joe Rogan and Tucker Carlson as proof that Americans "do not want to get entrapped in a war that has nothing to do with them".

Australia and the US were among 144 UN member states to vote at the general assembly in New York against recognising Russia's purported annexation of four Ukrainian regions. The Australian government has said the Russian-arranged votes in those regions were a "sham". But Rennick called for the those regions "to be given the choice of self-determination". He said: "Provided that voting is conducted fairly, then surely a democratic outcome in Ukraine is better than continuing the bloodshed, is it not?" Just a day earlier, the Coalition's spokesperson on foreign affairs, Simon Birmingham, said Putin was "a major risk to the world" because of his threats to use nuclear weapons, and Australia must remain steadfast "in support of Ukraine and the clear defeat of Putin".

https://www.theguardian.com/australia-news/2022/oct/26/australian-defence-force-troops-to-train-ukrainian-soldiers-in-the-uk

Science & Technology News

THE HINDU

Wed, 26 Oct 2022

Special Lecture Held on Innovation in Defence Technology and Opportunities for Entrepreneurship

A special lecture on 'Innovation in defence technology and the opportunities for entrepreneurship' was delivered by former Research Scientist and Director of the Research and Innovation Centre (DRDO), IIT Madras Research Park, V. Natarajan at the Madurai Kamaraj University on Wednesday. Mr. Natarajan highlighted various achievements, progresses and current thrust areas of the various arms of Defence Research and Development Organisation (DRDO), Government of India with special reference to the field of life sciences. He discussed deep sea research initiatives of DRDO with students and encouraged them to take research avenues in deep sea research.

He urged the students to participate in internships and training programmes supported by the several institutes of DRDO. The importance of collaborative ventures between DRDO and involvement of faculty from academic research institutions through extramural research were stressed in great detail. Chairperson of the School of Biological Sciences S. Chandrasekaran delivered the welcome address and Assistant Professor M. Jayalakshmi of the School of Biological Sciences proposed a vote of thanks. Vice-Chancellor of Madurai Kamaraj University J. Kumar was present at the event. Postgraduate students, research scholars and faculty members attended the event.

https://www.thehindu.com/news/cities/Madurai/special-lecture-held-on-innovation-in-defence-technology-and-opportunities-for-entrepreneurship/article66058254.ece

THE HINDU

Thu, 27 Oct 2022

Science Must Become Priority of Space Missions, We Need More Money for it: ISRO Chief Somanath

The LVM3 launch vehicle successfully placed 36 satellites of the privately owned OneWeb consortium. However, you have recently indicated that the Chandrayaan-3 mission (to place a rover on the moon) will now likely only be in June 2023. Are commercial launches more important to ISRO than scientific missions?

The entire space sector is based on demand. When there is demand, I have to fulfil it. We have had only four science missions but have 53 satellites in orbit. The science component has always

been very, very small. Science was never a priority but it must become the priority in the future. We've always had a very limited budget for science but we need more money so that we can do science missions. We are not doing enough in science but if we prioritise science, we will not get money.

The space policy, that will define the future of commercial space applications in India, has been on the anvil for a while. Is it expected soon and will it spell out the functions of New Space India Limited (NSIL). (NSIL is a public sector company and commercial arm of the (ISRO). The policy doesn't talk about the structure of the organisation. Policy only spells out the intent and that is to have more non-governmental entities enter the space sector. The elements of this and how we can achieve this 'intent' is what the policy will spell out.

In the future, does ISRO aspire to be NASA (National Aeronautics and Space Administration), in the sense more focussed on ambitious science missions?

NASA is the national space agency of the United States and decides that country's space activities. ISRO is the national space agency of India but the way both operate could be different because the U.S. ecosystem already has a developed industry. In India, there is no industry capable of doing anything (space launches, satellite manufacturing) independently. Thus, ISRO's role is to mentor and develop the industry ecosystem here. Once we get to that point, we could discuss the role of ISRO. Right now, I'm not interested in a comparison with another country. We have our own model.

https://mail.google.com/mail/u/0/#inbox/KtbxLwHPvbNCntMRXQHgpBgkhbFbqBZsJq

Hindustan Times

Thu, 27 Oct 2022

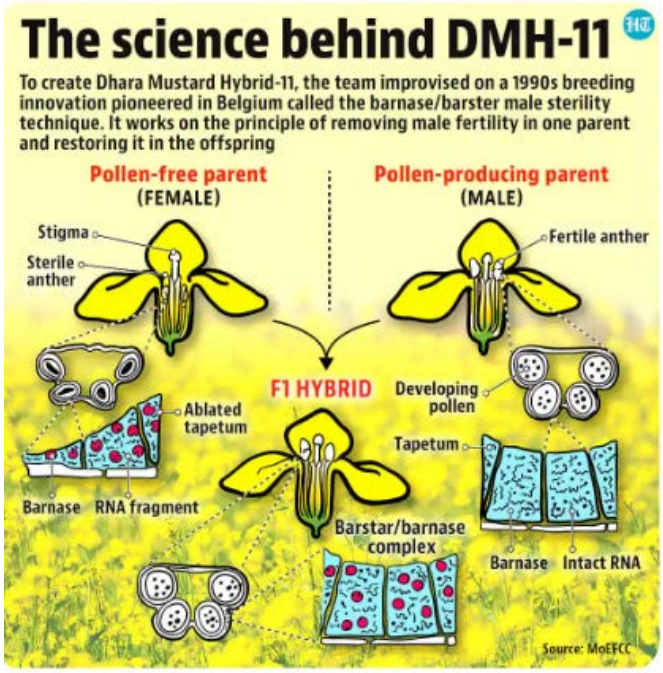
Decoding the Science Behind Genetically Modified Mustard

At the core of DMH-11, the genetically modified mustard variety that has been granted environmental clearance, is the principle of removing male fertility in one parent and restoring it in the offspring. The hybrid has been developed by Centre for Genetic Manipulation of Crop Plants, Delhi University, targeting higher yields than varieties that are currently grown in India.

The principle

To modify any variety of a crop so that it incorporates the desirable qualities from another variety, the obvious approach is to breed one with the other. In mustard, however, crossing two different breeds is a challenge because the crop is self-pollinating, which means that the offspring are produced by the male and female organs of the same plant. The solution is genetically modifying one of the breeds to make it male-sterile, so that it can no longer breed within itself. It is then cross-bred with another variety, which itself is genetically modified to serve another purpose: ensure that the offspring is not sterile. The technology used in DMH-11 involves the introduction of three genes called barnase, barstar, and bar. Found in a soil bacterium called Bacillus amyloliquefaciens, barnase in nature protects Bacillus from competing bacteria; while barstar protects the bacterium itself from barnase. The two genes have been harnessed for scientific purposes beyond crop modification, including cancer therapy.

When introduced as a genetic modification, barnase is aimed at making mustard male-sterile while barstar is to help restore male fertility. Bar, the third gene introduced, protects the mustard from a herbicide called phosphinothricin, commercially sold as Basta.



Blow by blow

The technology for introducing male sterility using barnase and barstar was developed by scientists in Belgium in the early 1990s. A crop modified with barnase is cross-bred with one modified with barstar. To make the genes work as targeted, the technology depends on what is known as a promoter. A promoter is a DNA region where key forms of molecular synthesis take place. In plants, bacterial genes can only express themselves under plant promoters. The genes encoding for barnase and barstar express themselves under a promoter specific to the plant region called tapetum, a layer of cells in the anthers (male organs) of the flower. The tapetum's role is to produce compounds that are essential for the development of mature pollen. When the barnase gene is introduced, the tapetum tissue degrades and mature pollen cannot develop. This flower will then act as the female.

The other flower, which will act as the male, is engineered with the barstar gene, aimed at restoring male fertility in the offspring. As in bacteria, barstar binds tightly with barnase and makes it ineffective in mustard too. This means that the hybrids grown by farmers will be fully fertile. DMH-11, which also uses bar, improvises on what is known as the barnase-barstar system. One of the parents (known as Event Var bn 3.6) contains the bar and barnase genes. This is the male-sterile parent. The other parent (Event EH-2 modbs 2.99) also contains the bar gene, besides barstar for restoration of fertility. DMH-11 contains all three genes: bar, barnase, and barstar.

Concerns and solutions

The crossing happens through wind pollination or bee pollination. Whether the mustard will attract bees is one of the areas of concern. Another concern is whether the genetically engineered

plants can potentially introduce the genes into wild populations. In a set of FAQs on its website, last updated in July 2021, the Union environment ministry notes that the safety of individual GM foods should be assessed on a case-by-case basis. For DMH-11, the ministry mentioned studies that found that the number of honeybees visiting this variety does not differ from those visiting non-engineered varieties. It added that the three genes are expressed in very low quantities, and there was no evidence that these could be transferred to humans or animals through consumption. The barnase-barstar system has been used elsewhere. One variety is the genetically engineered rapeseed MS11, whose safety was assessed by the European Food Safety Authority in 2020. This was not for direct consumption, but for creating further hybrids. While noting that the toxicological, allergenicity and nutritional assessment could not be completed then, the EFSA Journal observed that accidental release of MS11 seeds into the environment would not raise environmental safety concerns.

https://www.hindustantimes.com/cities/delhi-news/decoding-the-science-behind-genetically-modified-mustard-101666810462257.html