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Mon, 05 Sep 2022

कश्मीर में आतंक से लड़ने के लिए भारतीय सेना को मिला दमदार वाहन, जानिए इसकी खूबियां

प्रधानमंत्री नरेंद्र मोदी (Narendra Modi) के 'स्वदेशी अपनाओ की नीति' के तहत भारतीय सेना (Indian Army) में एक और स्वदेशी दमदार वाहन शामिल हुआ है. देश की सेना में स्वदेशी ताकत में लगातार इजाफा हो रहा है. अब कश्मीर (Kashmir) में आतंक (Terrorism) का खात्मा करने के लिए सेना में एक दमदार वाहन शामिल किया गया है. नाम है मार्क्समैन (Marksman). नाम जरूर विदेशी लग रहा होगा लेकिन ये वाहन पूर्ण रूप से स्वदेशी है क्योंकि इसे भारतीय कंपनी महिंद्रा (Mahindra) ने बनाया है.

सेना को ये वाहन कश्मीर में आतंकियों से लड़ने में बहुत मदद करने वाला है. ये वाहन बुलेटप्रूफ होने के साथ-साथ ब्लास्ट और स्टूल बुलेट्स का भी असर नहीं होता है. कश्मीर घाटी में सेना बुलेट प्रूफिंग दस्ते को मजबूत कर रही है. ये आधुनिक वाहन आतंकियों के हथगोलों और सीआरपीएफ को कोर गोलियों से बचाएगा. घाटी में विशेष ड्यूटी के लिए केंद्रीय रिजर्व पुलिस फोर्स के साथ भारी संख्या में महिंद्रा एलबीपीवी को तैनात किया गया है.

मार्क्समैन की खूबियां

बेहतर सुरक्षा उपायों वाले वाहनों में पैन टिल्ट जूम कैमरों के साथ रनफ्लैट टायर सिस्टम लगा होता है. इस वाहन में 40 फीट की शूटिंग रेंज के अलावा सुरक्षा के सभी उपायों का ध्यान रखा गया है. इसमें 300 मीटर तक की फायरिंग रेंज को कम करने और बढ़ाने में सक्षम एक सॉफ्टवेयर भी रखा गया है. इसे एक जगह से दूसरी जगह पर आसानी से ले जाया जा सकता है. इसमें इलेक्ट्रॉनिक मल्टी-फंक्शन टारगेट और वर्चुअल टारगेट सिस्टम है. इसके अलावा इसमें

सीटीएसआर में कंटेनर के बाहर एक-एक कंट्रोल स्टेशन है. फायरिंग पर नजर रखने के लिए शूटर के पास एक मॉनिटरिंग टैब है और कंट्रोल स्टेशन जो शूटर के फायरिंग रिजल्ट को प्रिंट करने में सक्षम है.

एडवांस टेक्नोलॉजी से लैस है मार्क्समैन

मार्क्समैन (Marksman) पूरी तरह से बुलेटप्रूफ (Bulletproof) और एडवांस टेक्नोलॉजी (Advance Technology) से लैस है. ये वाहन पूरी तरह से आतंकी गतिविधियों (Terrorist Activities) से लड़ने में सक्षम है. इस वाहन में जो कैमरे लगे हैं उससे ऑपरेशन (Operation) के दौरान गाड़ी में बैठकर चारों तरफ बाहर की हरकत पर नजर रखी जा सकती है. इतना ही नहीं इस वाहन को एनकाउंटर साइट (Encounter Sight) के बेहद करीब ले जा सकते हैं. वहीं, जवानों का मानना है कि इस तरह के वाहन मिलने से एंटी मिलिटेंसी ऑपरेशन में आतंकियों का सफाया करने में आसानी हो जाती है.

<https://www.abplive.com/news/india/defence-news-indian-army-increasing-strength-gets-marksman-bullet-proof-suv-2208244>



Mon, 05 Sep 2022

HAL to Develop LCA-Mk2 at a Total Cost of Rs 9,000 Crore: A Game Changer

The indigenous Light Combat Aircraft 'Tejas' Mk2, Project has been given the green light by the Cabinet Committee on Security (CCS) on September 1, 2022. The CCS has approved Rs 6,500 crore to design and build prototypes, test flights, and certification for the Tejas Mk2 fighter jet.

The Tejas Mk2, described as a 4.5-generation fighter aircraft, will not fall into the lightweight category and will be in the middleweight category. It will have 70 per cent indigenization, more than the Mark IA's 62 percent, and on board will be more advanced technologies made in India. This is a single-engine, multi-role, supersonic fighter plane made by state-owned Hindustan Aeronautics (HAL).

The Mk 2's preliminary design studies were finished in 2014 and were in the detailed design phase in 2015. The redesigned fighter was first displayed at the Aero India air show in 2019. It was a 17.5-tonne-class fighter with close-coupled canards and an integratedIRST system. The Metal-cutting for the Tejas Mark 2 started in February 2021. The first prototype was supposed to "roll out" in August 2022, but that date has been moved to the end of 2022. It should take off for the first time in late 2023. In the beginning, four prototypes are planned.

Girish Linganna, Aerospace & Defence Analyst tells Financial Express Online, "The advanced version of the Tejas LCA will have several new features to improve its ability to fly and fight.

Tejas 2.0 will have GE-414 engines with 98 Kilonewton thrust, which are more powerful than the current version. This will allow it to fly farther and carry more weapons and cargo than the current version. In addition, the new jet will have Active Electronically Scanned Array (AESA) radar that is made in India. This will be a big step up from the current ELTA EL/M-2032 multi-mode radar.”

As reported by Financial Express Online earlier, the Indian Air Force has plans to replace fighters like the Mirage-2000s, Jaguars, and MiG-29s with Tejas Mk2. The GE-404 engines on the existing Tejas Mk1 are being inducted to replace the aging MiG-21s, and these new fighters for the IAF are going to be used to defend against air attacks, and the Mk2 version will also be able to be used in both defensive and offensive operations.

In July, Air Chief Marshal VR Choudhary said that six squadrons of Tejas Mk2 would be purchased, which correspond to 108 planes. The new version of the aircraft will be equipped with a BrahMos missile. It will also be able to fire laser-guided bombs like the Mirage-2000.

“It can go on for longer without refuelling. It also has an Onboard Oxygen Generation System, which is being added for the first time. It will have the capability to carry heavy stand-off weapons like the Scalp, Crystal Maze, Spice-2000 and the BrahMos. The Mk2 is 1350 mm longer, has canards, and can carry 6,500 kg more than the LCA, which can only carry 3,500 kg,” explains Girish Linganna.

According to him, “A canard has been added to the plane next to the wings. Such canards are on modern fighters like the Rafale, Eurofighter, and Sukhoi-30MKI. The trailing edge of the wing has inboard and outboard elevons. Aside from the weapons and engine, the Tejas Mk2’s cockpit will be redesigned for ergonomics and maintenance. The fly-by-wire aircraft is made with aluminium alloys, titanium, steel and carbon composites.”

More about Mk2

It will have a software-defined radio-based tactical data link for secure communication, a powerful electronic warfare system, and network-centric warfare capabilities that are supported by the IAF’s AFNet digital information grid.

“The glass cockpit will be dominated by a touch-sensitive wide area display and a wide-angle holographic head-up display system and can be used with night vision goggles. The Mk2 will have a hand-on throttle-and-stick setup with the right hand on the stick and the left hand on the throttle to make the pilot’s job easier,” he adds.

According to a top IAF official, the LCA Mk2 is expected to be ready by 2024, and testing should be done by 2027. This is consistent with earlier details that HAL will start testing high-speed taxis in 2023, and in 2025, it will begin making a small number of them. The whole process of development will be done by 2027, and full-scale mass production will start in 2030. Tejas Mk2 will be ready to use starting in 2028. In addition to the six squadrons, HAL expects an order of another 210 planes.

Dwindling numbers of fighter squadrons

This will help in dwindling numbers of the fighter fleets in the Indian Air Force which is 30 right now when it requires 45 squadrons.

The CCS has sanctioned a total development cost of Rs 9000 crore including the Rs 2500 crore that has already been spent. Based on the information in public domain, the Defence Research and Development Organisation (DRDO) has set a target of 2027 to complete the flight testing.

<https://www.financialexpress.com/defence/hal-to-develop-lca-mk2-at-a-total-cost-of-rs-9000-crore/2656351/>



Mon, 05 Sep 2022

Artificial Intelligence is Indian Navy's New Strategic Frontline

By Amit Das

In modern geo-politics the role of Indian Navy is going to be more challenging and its active participation could decide the place of India in global power play. The seminar “Swavlamban” chaired by the PM Modi on SPRINT Challenges on July 18th 2022, is showcasing the seriousness of New Delhi towards the strengthening the Indian Navy through the modern indigenous technologies. The presence of Chinese third generation research and survey ship “Yuan Wang 5” in Hambantota, Sri Lanka, is sufficient to explain that the Indo-Pacific is going to be future coliseum of geo-politics. And the Indian Ocean may observe more international advanced war ships and stealth submarines from global powers. It is provoking India to adopt modern cutting-edge naval technologies to protect the country's interest and control the foreign powers. Technology is always an important agent, which decides or redefines the war parameters with some distinctive outputs. In modern warfare the Naval forces are facing hybrid warfare and simultaneously it is converting the war from human centric to technology centric. To improve the war-capabilities of Indian Navy with resilient indigenous technological ecosystem, the INIP (Indian Naval Indigenisation Plan) 2015-2030 is formulated to upgrade the state-of-art with high-end technologies. The intelligent warfare is demanding the revolution in military technologies and its appropriate deployment.

AI the Driving force: the demanding roadmap for Indian Navy

January 2022, a workshop on ‘Leveraging Artificial Intelligence (AI) for Indian Navy’ was organised by the INS Valsura to identify the opportunities of advanced AI technologies for Indian Navy. Intelligent technologies are redefining the navy's warfare and enabling global powers to mutate and refresh their strategic trends. That continues technological changes could be applied within the existing system or in new systems. The incremental changes in naval-war technologies do not develop in segregation. War-Machines or War-Technologies are always erected through the continuous operations and continuous innovation. The people-centric smart naval-war machines are gradually built on intelligent technologies, exploring AI for the future battle grounds.

The application of AI in war is extensive and it addresses the battle field challenges with more accuracy, flexibility and insightful approach. To fabricate the AI mesh for the naval-combat is

the constant theme for the global naval powers and India is also drawing the journey-map towards this path. The plug-in of AI technologies with the strategic technologies could create the good amount of potential to respond the unpredictable environment. AI, deep learning, machine learning (ML) and reinforcement learning is going to be major catalyst for the next-generation warfare. The involvement of Machine Learning (ML) is enforcing the systems to perform better than the human.

Presently AI is encapsulated for the number of naval applications or technologies by most of the global powers and their competitors. The application of AI is not limited up to the deep intelligence, active surveillance and reconnaissance, supportive logistics, cyber security, effective command and control, autonomous naval systems. Advanced military powers are concentrating themselves for the deployment of AI technologies to replace the human intelligence and trying to prepare the naval machines for more complex and cognitively difficult locus with admirable self-learning situational awareness.

AI-Enabled eco-systems—the capability matrix

Systems are smarter than the operator-based systems with the quick react capabilities. System could easily analyse and manage the high-volume data with exponential growth. System has enormous capability to add-on new innovative technologies.

But is transforming is the potential that system could actively interpret the future moves of the enemy fighting machine and competent to reduce the conflict effect.

The Indian Navy is serious about AI and advanced intelligent technologies, wants to execute with “Capability-Enhancement-Objective (C-E-O)” to increase the situational awareness and situational reactions of the sea operations. In that background, AI is a major drive for the future battles and could change the internal dynamics of the war with the broader concept.

Requirement of Future Navy

The information technology dominance over the enemy country. It is about less use of human intelligence in the situation where the decision making is more inclined towards non-combat scenario.

The critical requirement is for the networked and self-automated systems and subsystems.

Low-cost guided missile with good quality of proximity, responsiveness and platform independency.

Vertical and/or short take-off and landing (V/STOL) Aircrafts

Cooperative Engagement Capability (CEC), integrated sensor network platform with missile fire capabilities Extensive use of UAV (Unmanned Aerial Vehicle), UUV (Unmanned Underwater Vehicle), XLUUV (Extra-Large unmanned undersea vehicle) and USV (Unmanned Surface Vessels) for the complex and regular operations.

Stealth Nuclear power attack submarine with intercontinental ballistic missile.

Installation of real-time cognitive sonar network on broad sea floor.

Why AI Roadmap required by Indian Navy

The sharp digitization of naval forces could change the concept of hybrid war by the machine speed and collective use of huge number of weapon systems handled by AI.

The systems of foreign countries could be capable to determine the action for the engagement of targets. And now the incarnation of high degree of autonomous-automation naval systems is part of the strategic acquisition.

Invariably, without the structured AI support the high-volume of strategic information could not be processed. Soon, it will be almost difficult to map such information on the existing tools with limited data matrix to decipher the ultra-complex scenario unfolding today.

The next-generation warfare is based on “Autonomous-Weapon-Systems”. It has required the sophisticated AI infrastructure to deliver the complex functions such as assessment of the situation, decision making and control without any human involvement.

AI is beginning to fully leverage the Manned-Unmanned Teaming (MUM-T) and improve the capability of routine duty and resource management. Help to reduce the gaps between different potential areas.

Another critical area to focus where the AI needs greater flow in escalating the mobility of naval combat operations and so enhance the situational-control capabilities of the higher-command.

It is visible as the dimension of warfare is shaping towards the more precision war. So, the Increase of Machine-Interventions in Naval Operations, AI could easily control those machines rather than the Natural Intelligence. AI then feeds into Resilient and Robust techno-infrastructure, adding to the experience of Information Warfare and Cyber Security

AI Transformation Tool kit for Indian Navy

The Artificial Intelligence (AI) is assured to change the complete dynamics of the world as well as military technology and it is re-writing the art of war by the intelligent and self-controlled weapons. This transformation is gradually converting the naval powers towards the AI-Naval-Powers.

The steps of AI transformation tool kit are basically the deployment of in-house pilot projects to achieve acceleration and creation of in-house active AI-Teams with AI-Capabilities.

It involves the arrangements of AI Training for the all the stake-holders and development of long-term AI Strategy and AI Policies. The fundamental approach is to outsource of applied AI knowledge from the Academia & Industry and identification of use-cases and encapsulation with AI-Knowledge. Broadly, AI transformation needs to fabricate the complete alignment between the innovative AI Products for the strategic value. AI tools will change the entire dynamics on the Strategic Collision globally with competitive matrix.

The most important aspect is to design and execution of AI Framework for next-generation naval warfare. This will lead to AI-Value creation and AI-Value capture and AI-Goal content integrity for the final results. In long term the organized AI seeds, prepared by the AI-Tool kits could enhance the strategic intelligence and it could make the organization more AI friendly with the good intensity of AI adaptation rate. The acceptability of AI could upgrade the system as intelligent amplifier.

Future Technologies for the Naval Forces

What are elements, when we plug-in AI with the such technology clusters which could expand the capabilities of the navy? We have outlined the specific areas which starts from the computation Capabilities.

Information and Network infrastructure
Sensor Technologies
Automation System
Advanced Human Performance Technologies /Augmented Intelligence
New material design and its implementation
Power System
Propulsion System
Environmental Technologies
Modelling and Simulation
Logistics
Rapid Prototype Modelling
Optimised Resource Planning
Design of Simulated Theatre of War
Fabrication of Dynamic Mission Planning
Cognitive Process Modelling
Oceanography Modelling / Design of Highly Non-Linear models of Ocean
Weather Modelling and prediction

How can we leverage AI will unfold our capability roadmap for the future conflict. What is the most important factor here as we understand the role that AI will play; it is going to alter the futuristic planning under the plan. What will it save –the cost of unnecessary military equipment but more so the cost of loosing the edge of modern warfare.

<https://www.financialexpress.com/defence/artificial-intelligence-is-indian-navys-new-strategic-frontline/2656038/>



Mon, 05 Sep 2022

India, US Joint Military Exercise Could Bring in New Technologies for Indian Army

By Kartik Bommakanti

The Indian Army and the US Army are slated to conduct high-altitude military exercises between October 14–31, in Ladakh not far from the Line of Actual Control (LAC) where an active military stand-off is underway between India and the Peoples Republic of China (PRC). As part of the 15th round of the Yudh Abhyas joint military exercise, India will showcase strategies and

tactics the army uses in high altitude or mountain warfare. Similarly, the US Army will also showcase its technologies that can be deployed and used in mountainous terrain.

US Technologies for Indian Use

One of the critical areas is communications technology which is likely to be effective in high-altitude mountain terrain. For starters, the US Army has already started the process of introducing new Intelligence, Surveillance and Reconnaissance (ISR) technologies for application in high-altitude environments. Take the case of the US Army's Aerial Intelligence, Surveillance and Reconnaissance (A-ISR) system—an air-borne platform, which is also known as the Airborne Reconnaissance and Electronic Warfare System (ARES), which recently underwent demonstration tests in the Indo-Pacific. While the latest evidence suggests that it is still in the stage of technology demonstration, it will not be long before it is subjected to full-fledged operational deployment.

In April, the ARES was despatched to the Indo-Pacific for operational employment. The ARES is a business jet-based technology demonstrator which will assist in real-time intelligence collection and processing. From the standpoint of intelligence collection, the ARES helps meet the trinity of elements— Processing, Exploitation and Dissemination (PED). Even if the ARES system is only a technology demonstrator, and not ready for operational use, let alone sale, its capabilities could be showcased to the Indian Army when the Yudh Abhyas joint exercises happen later in October this year. Beyond the ARES system, there are other technological capabilities the US Army could demonstrate.

High Aerial Platforms

In what the US Army calls “a passively denied environment”—which involves natural impediments created by mountain features such as valleys and mountain folds forming natural barriers against Radio Frequency (RF) and communication relays—technologies are being tested to develop means by which soldiers, deployed for action in undulating mountain terrain, can communicate with senior commanders who are distantly located.

To overcome the obstacles presented by these geological features of mountainous environments, the US Army is in the process of testing the “Aerial Tier Network” consisting of a swarm of drones. These drones are designed to relay downward, and receive signals and communication upward from the ground permitting the signals to “hop” over obstructions and thus enabling communication between soldiers across a rugged mountainous battlefield, such as between two valleys separated by a mountain ridgeline, using a network of High Aerial Platforms (HAPs).

Lack of effective communication is likely to be extremely disruptive to the conduct of military operations to the extent that soldiers could not only lose contact with each other but also fail to coordinate and synchronise responses to enemy action in the absence of signal relays. Loss of contact between dispersed infantry fighting units across mountainous terrain could, and will, generate opportunities for the enemy to execute ambushes, disrupt the movement of troops and bring in reinforcements.

As of today, communication relays or transmissions occur via satellites. However, satellites have weaknesses in that they are vulnerable to jamming and could be destroyed using counterspace capabilities, kinetically or non-kinetically, such as Anti-Satellite (ASAT) weapons. The Peoples Republic of China (PRC) and Pakistan which pose an unrelenting threat to India can be tackled using HAPs, as they offer more flexibility in ways satellites cannot. Since the modern battlefield

is sensor heavy, supplementing satellite communications through HAPs makes sense for tracking and locating enemy positions, directing fire accurately using artillery guns, and enabling close cooperation between infantry units and armoured units deployed for operations in high-altitude terrain.

If precision firepower is to be effectively applied against highly dispersed targets in rarefied atmospheric conditions—which is a key characteristic of high-altitude terrain—leveraging high-altitude technologies that the Americans are likely to showcase will at least be helpful, if not a vital imperative.

High-altitude Technologies and Mountain Warfare

From an Indian standpoint, these high-altitude technologies will help the army integrate them into its operational strategy and tactics in the domain of mountain warfare. To be precise, technologies developed by the Americans geared for mountain warfare might not be immediately available, but the US Army's demonstration will give the Indian Army a window into what to expect and how these technologies may find application in the area of mountain military operations. It will also allow the Indian Army to compare the performance of its own ISR capabilities for high-altitude operations relative to the US.

The US Army, for its part, may gain experience from the Indian Army's decades' worth of knowledge and experience in high-altitude warfare. However, the Americans are certainly not amateurs or greenhorns in this regard. Years of fighting the Al Qaeda terrorist group and the Taliban in Afghanistan's rugged mountainous regions have given American ground forces a substantial amount of experience.

These technologies could supplement India's own efforts in this area. As the latest reports suggest, India is in the process of acquiring swarm drones to meet ISR functions for mountainous terrain military operations. The Indian Army is expected to acquire two swarm drone sets, developed by a duo of start-ups based in Bengaluru, to cater to the ISR and communications needs for its ground units covering armoured, artillery and infantry forces deployed in Eastern Ladakh. These Unmanned Aerial Vehicles (UAVs) will help the Indian Army with communication relays, surveillance data, and intelligence about enemy force movements and deployment patterns involving concealment and deception, and also help with synchronising armoured, mechanised and infantry-based defensive and offensive operations. However, it is unclear what Electronic Warfare (EW) capabilities these drone sets possess for action across the Electromagnetic Spectrum (EMS).

Any military confrontation between India and China will occur in a dense electromagnetic environment. Without significant EW capabilities in the Indian Army's order of battle, Suppression of Enemy Defence (SEAD), Electronic Attack (EA), Electronic Support (ES), and Electronic Protection (EP) are all crucial to dominating the Electromagnetic Spectrum (EMS), or at least at a necessity to prevent the PLA ground and air forces dominating the EMS. If China were to dominate the EMS during a war with India, it will deprive India of situational awareness, communications and guidance for the army's weapons systems. The US Army is in the process of integrating the Multi-Function Electronic Warfare – At Large (AFEW-AL) pod most likely mounted on an MQ-1 Gray Eagle drone. The Indian Army would be well advised to urge the Americans to showcase this capability in the forthcoming Yudh Abhyas exercise.

Conclusion

Notwithstanding Washington's quest and preference that the Indian Army source technology from the US, down the line, India could also develop some of these technologies indigenously without significant external assistance. Nevertheless, for now, the effort should be to evaluate and determine the extent to which American technologies are effective and relevant in meeting the unforgiving demands of mountain warfare. Despite the Indian Army's swarm drone acquisition, they ought to reserve judgment and await the American demonstration, which might reveal complementarities as well as strengths and weaknesses with its own swarm drone deployments.

<https://www.moneycontrol.com/news/opinion/defence-india-us-joint-military-exercise-could-bring-in-new-technologies-for-indian-army-9130651.html>



Mon, 05 Sep 2022

जानिए, भारत ने बीते 5 सालों में कितने देशों को बेचे हैं हथियार और अन्य साजो-सामान, क्या है आगे का प्लान?

रक्षा के क्षेत्र में भारत दुनिया के बड़े बाजारों में से एक है. सरकार का पूरा ध्यान इस सेक्टर में आत्मनिर्भरता को बढ़ाना है. 'मेक इन इंडिया' अभियान में डिफेंस सेक्टर एक अहम भूमिका निभा रहा है.

बीते कुछ दिनों में आपने देखा होगा कि भारत सेना को कई हथियार दिए हैं जो पूरी तरह से स्वदेशी तकनीक पर आधारित हैं. आईएनएस विक्रांत इसकी सबसे बड़ी नजीर है. आपको बता दें कि भारत दुनिया में तीसरा ऐसा देश है जो रक्षा के क्षेत्र में सबसे ज्यादा खर्च करता है. वह जीडीपी का 2.15 प्रतिशत रक्षा क्षेत्र में खर्च करता है.

भारत सरकार ने लक्ष्य तय किया है कि 2025 तक भारत रक्षा क्षेत्र में 25 बिलियन डॉलर निर्यात करके कमाएगा इसमें 5 बिलियन डॉलर एयरस्पेस के क्षेत्र से जुड़ा है. भारत को रक्षा क्षेत्र में आत्मनिर्भर बनाने के लिए देश में दो डिफेंस इंडस्ट्रियल कॉरिडोर्स बनाने का ऐलान किया है. जिसमें एक उत्तर प्रदेश में बन रहा है और दूसरा तमिलनाडु में.

रक्षा के क्षेत्र में अब तक की उपलब्धियां

- साल 2021-22 में भारत ने डिफेंस सेक्टर में 12,815 करोड़ रुपये का साजो-सामान दूसरे देशों को बेचा है.
- सीमा सड़क संगठन (BRO) ने सड़क बनाने में गिनीज वर्ल्ड रिकॉर्ड बनाया है. लद्दाख में 19024 फीट की ऊंचाई पर वाहनों की आवाजाही के लिए एक सड़क बनाई है.
- बीते 5 सालों में डिफेंस सेक्टर के निर्यात 334 फीसदी बढ़ा है और भारत ने 75 देशों को रक्षा से जुड़ा साजो-सामान भेजा है.
- भारतीय रक्षा एवं विकास संगठन (DRDO) ने टारपीडो सिस्टम से चलने वाली सुपरसोनिक मिसाइल का सफल परीक्षण किया है.
- डीआरडीओ नई जेनरेशन की अग्नि-P मिसाइल का सफल परीक्षण किया है.
- 10000 फीट की ऊंचाई पर मनाली-लेह हाइवे पर अटल टनल बनाकर विश्व रिकॉर्ड बनाया गया है. ये उपलब्धि इसलिए भी मायने रखती है क्योंकि यहां पर तापमान माइनस डिग्री पर होते हुए भी काम जारी रखा गया.
- शॉर्ट रेंज की बैलेस्टिक मिसाइल पृथ्वी-2 के जरिए एक छोटे से लक्ष्य को सफलता पूर्वक टारगेट किया गया. मिसाइल के जरिए इतना सटीक निशाना लगाने का सिस्टम अभी तक सिर्फ अमेरिका और चीन जैसे ही देश कर पाते थे.
- लेजर तकनीक पर आधारित स्वदेश निर्मित एंटी टैंक गाइडेड मिसाइल (ATGM) का सफल परीक्षण.
- सर्च और रेस्क्यू के लिए भारत में ही निर्मित एडवांस्ड लाइट हेलीकॉप्टर MK-III को भारतीय नेवी को सौंपा गया.
- हाई-स्पीड एक्सपेंडेबल एरियल टारगेट (हीट) 'अभ्यास' का सफलतापूर्वक परीक्षण किया. ये एक स्वदेशी सिस्टम है.
- सीमा पर किसी भी गतिविधियों, निर्माण, परिवर्तन आदि पर नजर रखने के लिए CoE-SURVEI तकनीक का निर्माण किया गया है. ये AI आधारित सॉफ्टवेयर तकनीक पर काम करता है.

मेक इन इंडिया के तहत क्या हैं और प्रोजेक्ट

उत्तर प्रदेश और तमिलनाडु में बन रहे डिफेंस इंडस्ट्रियल कॉरिडोर के अलावा देसी तकनीक पर आधारित जमीन से हवा में मार करने वाले मिसाइल सिस्टम आकाश, अर्टिलिरी गन सिस्टम धनुष, जमीन से हवा में मार करने वाली मिसाइल, अग्नि-5, ब्रह्मोस, पिनाका, रॉकेट सिस्टम, पिनाका मिसाइल सिस्टम, एंटी-टैंक गाइडेड मिसाइल हेलिना जैसे प्रोजेक्ट पर काम हो रहा है. मिली जानकारी के मुताबिक सरकार की ओर से अब तक 500 से ज्यादा डिफेंस इंडस्ट्रियल लाइसेंस 351 कंपनियों को जारी किया जा चुका है.

<https://www.abplive.com/news/india-plan-and-achievements-of-defense-sector-under-make-in-india-abpp-2208556>



Mon, 05 Sep 2022

Meet MIG-29 'Black Panthers', Primary Fighter Jets to Operate from India Navy's Aircraft Carrier

The Indian Navy recently commissioned the first-ever India-made naval air carrier INS Vikrant in the service, inaugurated by Prime Minister Narendra Modi in an induction ceremony held in Kochi, Kerala. The INS Vikrant is only the second active naval aircraft carrier with the Indian Navy and also the first indigenous carrier built under the PM Modi's ambitious 'Make-in-India' campaign. It is named after the first aircraft carrier of India - INS Vikrant - that played a crucial role in 1971 Indo-Pak war. As they say, a naval aircraft carrier is as good as the planes it can carry. The INS Vikrant is made to house 35 aircrafts. While India is in the process of induction either of the Boeing F-18 Super Hornet or Dassault Rafale M, for now, it will operate with the Russia-made MiG-29 jets. Here's an understanding of the fighter jet:

All about MiG-29K 'Black Panthers'

The Russian-made 'Black Panthers', a naval version of the MiG-29 fighter, would be the primary fighters of INS Vikrant, the largest ship ever built in India. The aircraft has been in service with the Indian Air Force for decades. Russia shipped a total of 45 MiG-29K/KUB fighters to India in two batches. The second lot of 29 aircraft was delivered in 2016, while the first lot of 16 aircraft was delivered in 2011.

- The naval MiG-29 jet, called MiG-29K, will operate from INS Vikrant in anti-air, anti-surface, and land attack roles

- The MiG-29K is an all-weather fighter capable of exceeding twice the speed of sound - or Mach 2
- It can pull up to eight times the force of gravity and reach altitudes of over 65,000 feet
- Capable of engaging targets in the air, sea, and land, the MiG-29K can fly long distances to complete crucial missions because of its air-to-air refuelling capability
- The MiG-29K squadron has been named INAS 303, also known as the "Black Panthers"
- It differs significantly from the IAF MiG-29B variants optimised for air-to-air missions.

INS Vikrant aircrafts

Apart from the MiG-29K, the warship's airwing will also include Kamov-31 helicopters, MH-60R multi-role helicopters from the US, and domestic Advanced Light Helicopters (ALH) and Light Combat Aircraft (LCA).

INS Vikrant: Future aircrafts

The Indian Navy is already hunting for multi-role naval fighters for INS Vikrant. The Indian Navy is interested in procuring a twin-engine aircraft to replace the MiG-29Ks currently operating from INS Vikramaditya. Boeing's F/A-18E/F Super Hornet and Dassault's Rafale-M, the naval derivative of the French multi-role fighter, are competing to provide carrier-borne warplanes to the Indian Navy. Both fighters have already undergone flight testing by the Navy at the INS Hansa shore-based test facility in Goa to test which aircraft would work best with the 40,000-ton INS Vikrant. Fighter aircraft are launched using the Short Take-Off But Arrested Recovery (STOBAR) technology. INS Vikrant is outfitted with a ski-jump and a set of three 'arrestor wires' for recovering the aircraft once it has been launched.

<https://zeenews.india.com/aviation/ins-vikrant-meet-mig-29-black-panthers-the-primary-fighter-jets-to-operate-from-india-navys-2505880.html>



Mon, 05 Sep 2022

Bhilai Steel Plant Gears Up to Make Steel for Indigenous Attack Submarine Project

The SAIL-Bhilai Steel Plant (BSP) in Chhattisgarh is going to add another feather in its cap by its valuable contribution to another major defence project - indigenous submarine for the Indian Navy. BSP has almost completed the work on the development of a testing facility for the

manufacturing of steel to be used in the making of the nation's first indigenous submarine, BSP sources said.

However, the manufacturing of the plates will be done only after the testing and inspection by the teams of the Defence Metallurgical Research Laboratory (DMRL) and the Indian Navy. The testing this time will be ten times more than the testing done during the production of steel for INS Vikrant, they said.

The schedule of the visit of DMRL and Indian Navy teams has not yet been finalised. "We are in constant touch with the DMRL and Indian Navy on the visit schedule. Yes, we have started the process for developing plates of the same grade, which was used in the INS Vikrant aircraft carrier, for the submarine project", sources said refusing to divulge anything further details.

Besides, BSP Bhilai has supplied materials for Chandrayaan-II which is in the making and Gaganyaan project. BSP's contribution to INS Kamorta, Dhanush Howitzers and Arjun MBTs has been crucial, a top BSP official said.

The government of India has set in motion a process for indigenously developing the first three nuclear submarines. It will be having 95 per cent 'Made in India' content in them and it would further go up in the next three.

<http://www.indiandefensenews.in/2022/09/bhilai-steel-plant-gears-up-to-make.html>



Tue, 06 Sep 2022

India-Japan 2+2 Ministerial Meet: Defence Minister Rajnath Singh, MEA Jaishankar to Visit Tokyo from Sept 7-10

Defence Minister Rajnath Singh and External Affairs Minister S Jaishankar will pay an official visit to Japan for the second India-Japan 2+2 Ministerial Meeting from September 7-10, 2022.

During the visit, Singh and Jashankar will hold the Defence Ministerial Meeting and Foreign Ministers' Strategic Dialogue with their counterparts, Defence Minister Yasukazu Hamada and Foreign Minister, Yoshimasa Hayashi respectively.

The first India-Japan 2+2 Foreign and Defence Ministerial Meeting was held on November 30, 2019. Notably, India and Japan have always held cordial relations. The two countries are members of the Quad along with the United States and Australia.

In May 2022, Prime Minister Narendra Modi held a bilateral meeting with his Japanese counterpart Fumio Kishida in Tokyo. PM Kishida also hosted a dinner for PM Modi. They had

"productive" exchange of views on enhancing bilateral relations in various spheres as well as on some regional and global issues.

The two leaders had agreed to further enhance bilateral security and defence cooperation, including in the area of defence manufacturing. They concurred that the next 2+2 Foreign and Defence Ministerial Meeting may be held in Japan at the earliest.

PM Modi and his Japanese counterpart appreciated the growing economic ties between the two countries. They agreed that both sides should work jointly towards implementing their decision to have 5 trillion yen in public and private investment and financing from Japan to India in the next five years. PM Modi highlighted the steps taken by the Indian government to improve ease of doing business, logistics through Gati Shakti initiative and urged Prime Minister Kishida to support greater investments by Japanese companies in India.

<https://www.timesnownews.com/india/india-japan-22-ministerial-meet-defence-minister-rajnath-singh-mea-jaishankar-to-visit-tokyo-from-sept-7-10-article-94015724>



Mon, 05 Sep 2022

Sea Control or Sea Denial? Why India Needs to Reorient its Naval Strategy Post Vikrant

By Yusuf Unjhawala

INS Vikrant has been commissioned into the Indian Navy by Prime Minister Narendra Modi. It is a proud moment for India to join a select club of advanced countries that build their own aircraft carriers. Though delayed by several years, INS Vikrant is a great achievement for the Indian Navy and Indian shipbuilding. While the prime minister rightly praised the Vikrant, his government has questioned the Indian Navy's desire for a larger third carrier. The debate over it has been persistent and heated, owing primarily to a purported lack of funds.

Why India needs aircraft carriers

Indian Navy's maritime doctrine draws on the lessons of India's lack of sea control since colonial times. Although the Europeans did not launch a maritime invasion, their control of the seas had a significant impact on India's maritime trade, before eventual colonisation. Sea control is the central concept around which the Indian Navy is structured and considers an aircraft carrier as a primary asset. Sea control is the ability of the navy to act freely in an area of operation. Those who control the sea deny it to the adversary by default.

An aircraft carrier is a symbol of national power with tremendous operational capability. Depending on how they are used, it is also an excellent tool for diplomacy and political messaging to both friends and adversaries. It is a valuable asset to the project force. The vast oceans and limitations of land-based aerial assets to deliver adequate and sustained force over long distances necessitate carrier-based aviation. They can quickly move into an area of operation and operate independently for prolonged periods.

Developing a blue water navy centred on aircraft carriers to protect the country with vast expanses of seas surrounding it was felt soon after independence. The British Majestic class aircraft carrier was acquired by India and commissioned as INS Vikrant in 1961, followed by INS Viraat in 1987, both of which were decommissioned after their service lives were completed. INS Vikramaditya was commissioned in 2013. A rapidly growing economy, expanding interests, a large diaspora spread throughout the world, including conflict-prone regions, and the rapidly changing geopolitical and geo-economic situation, as well as responding to natural disasters in the Indo-Pacific region, have increased the Indian Navy's responsibilities.

India relies heavily on the seas for trade and energy. As a major regional power, India aspires to be a security provider. The United States, which has been policing the oceans, is becoming increasingly stretched. The balance of power is shifting to the Indo-Pacific, and the rules-based order that has kept the peace since World War II is being challenged by China's rise. India must not only assume a large security role in the Indian Ocean Region in order to protect its interests, but also deny the same to an adversary filling any potential vacuum. To back up its diplomacy, India needs naval capabilities that persuade the region's countries to entrust maritime security to India rather than looking elsewhere. The Indian Navy's maritime doctrine focuses on the application of naval power across the spectrum of conflict, including war, less than war situations and peace. The maritime strategy states that in order to provide 'freedom to use the seas' for India's national interests, it is necessary to ensure that the seas remain secure. A key aspect of the strategy is shaping a favourable and positive maritime environment to enhance net security and develop capabilities for force projection and protection.

The Indian Navy's primary area of responsibility is the Indian Ocean Region. But with its rapidly growing economy, interests and stature, India seeks to expand its influence. As External Affairs Minister S Jaishankar articulated, India would not be constrained between the Malacca Straits and Gulf of Aden. Our interests, our influence, our activities today go way beyond. The Indian Navy follows India's diplomacy. The then Navy chief, Admiral Sunil Lanba, stated, the Indian Navy is deployed from the Pacific to the Atlantic and this is what we are going to do. The distinction between primary and secondary areas of operation will likely get erased in the future.

China will contest the Indian Ocean maritime space with its growing naval might. India has interests in the South China Sea and the Western Pacific, and it deploys naval assets to the region on a regular basis, as well as participates in exercises with friendly countries. The two countries' land borders are likely to remain hostile for a long time, and India will have to use naval force in the event of an all-out land war, exploiting China's vulnerabilities in the seas to force favourable outcomes. Furthermore, India's island territories of the Andaman and Nicobar Islands are over 1,000 kilometres away, unfortified, and vulnerable, making carriers critical for their defence in any event. India has been a first responder for humanitarian assistance and disaster relief as climate change and extreme weather events have become more common. Indian citizens in conflict zones rely on Indian armed forces to rescue them. Carriers bring not only massive force capabilities, but also relief and sealift capabilities, making them critical for India.

Why India needs a larger third carrier

The Indian Navy considers a third carrier an operational necessity. The Parliamentary Standing Committee on Defence recommends three aircraft carriers for navy — “to bridge operational deficiencies thus arising, three aircraft carriers are an unavoidable requirement to meet any eventualities”. Three carriers are required to have at least two deployed operationally while the third undergoes maintenance or refit.

Smaller carriers, such as the INS Vikrant, carry only 20-24 fighter jets and their ski-jump design limits combat capabilities due to reduced fuel and weapon payload. With jets required for fleet defence, the number of aircraft available for offensive missions is reduced. A 65,000-ton carrier will be able to carry up to 40 fighter jets and full fuel and weapons loads with catapult assisted takeoff. This carrier will also be able to launch force multipliers such as surveillance and early warning aircraft, which cannot be launched from ski-jump carriers.

Money and prioritisation

The late Chief of Defence Staff, General Bipin Rawat, asked the Navy to choose between nuclear attack submarines (SSN) and aircraft carriers due to resource constraints, stating that India is not an expeditionary force. The reasoning is flawed because it may be taking into account how the United States uses its carriers. Carriers are the most powerful sea control tools around which the Indian Navy is structured. The navy is unequivocal in its need for a larger third carrier, describing it as non-negotiable. It rejects the carrier versus SSN argument, stating that both are required and that the SSN will be a critical component of its future carrier battlegroups. In its maritime capability perspective plan, the navy claims to have budgeted for carriers, submarines, and maritime patrol aircraft.

Conclusion

The supposed lack of funds, and the subsequent push to prioritise submarines, appears to compel the navy to shift its doctrine from sea control to sea denial, while shifting the nation’s security outlook from maritime to land-centric. Sea denial is the tactic of denying an adversary access to the seas, which is primarily accomplished with submarines. Carrier battlegroups include submarines, which is why the Indian Navy refuses to view the two as binary and does not consider sea control and sea denial to be mutually exclusive. Vulnerability of the carrier due to detection by satellites and long range missiles has been cited, particularly the Chinese DF-21 and DF-26 ballistic missiles, dubbed carrier killer. The Chinese have yet to demonstrate operational success in hitting a ship travelling at 30 knots. These land-based missiles lack the range to reach the Indian Ocean, where Indian carriers will be primarily deployed. A carrier is a highly protected asset that controls vast areas of the seas and is difficult to sink. Even if a couple of missiles hit it, it will not sink.

Doctrines derived from learnings dating back to India’s colonisation cannot be discarded. It will have serious security consequences. Small countries with a brown water navy benefit from sea denial. Since Independence, India has envisioned a blue-water navy. At the doctrinal level, sea denial does not serve its expanding interests, counter security threats, or fulfil the aspirations as a security provider. Aircraft carriers are crucial to the Indian Navy’s ability to control the seas.

<https://www.firstpost.com/opinion-news-expert-views-news-analysis-firstpost-viewpoint/sea-control-or-sea-denial-why-india-needs-to-reorient-its-naval-strategy-post-vikrant-11188611.html>

The Tribune

Tue, 06 Sep 2022

Strategic Bomber Route Not Needed for SFC

Gp Capt Murli Menon (Retd)

There has been a buzz in the media about the need for dedicated bomber aircraft for the Indian military's Strategic Forces Command (SFC). Some armchair strategists are pitching for having dedicated aircraft for strategic bombing tasks, independent of the IAF. The SFC, created in January 2003, forms a part of India's Nuclear Command Authority (NCA), responsible for the management, administration and operational orchestration of the nation's tactical and strategic nuclear arsenal. It has the responsibility of initiating the process of a nuclear weapon delivery — air-, sea- or land-based — after the necessary approval by the NCA.

A traditional nuclear triad comprises aerial bombers, submarines and land-based missiles, including tactical nukes. Though, thankfully, no nuclear weapons have been employed since the Hiroshima-Nagasaki bombings of 1945, existing nuclear command authorities have been modelled on Cold War formats and India would have a similar arrangement in place.

The critical consideration against having a dedicated SFC strategic bomber fleet is the astronomical cost. For example, the next-generation B-21 Grumman strategic stealth bomber is expected to cost around \$0.5 billion each, the upgradation bill of the Pentagon triad for the next decade totalling around \$350 billion over a life cycle. Clearly, neither is such a humongous outlay affordable nor is it warranted, given our nation's security situation. For countering nuclear threats (given our existing no-first use policy) against China and Pakistan, India would need to structure a nuclear response within the existing fighter force structure and our Prithvi IIs and Agni Vs.

Be that as it may, it needs to be understood that though assets may be forked out to the SFC, the strategic air campaign would be one of the operational tasks for the IAF and can never be divorced from it doctrinally. So, even if the NCA tomorrow decides on a first-use nuclear policy, the strategic assets would be part of the overarching IAF air campaign. Role-dedicated bombers would be called for only in case the peculiarities in weapon load dictate so. Most nuclear weapons could be delivered by a suitably modified SU-30, Mirage 2000 or Rafale, the LCA Tejas or even a Jaguar. The strategic depths envisaged in Pakistani and Chinese target areas would not call for other long-range, but vulnerable, bomber aircraft for weapon delivery as our tactical aircraft fleet could well undertake the tasks with extended ranges, if required, enabled by aerial refuelling.

There has also been talk of acquiring the Blackjack TU-160 or its follow-on PAK DA fifth-generation fighter for the IAF to showcase its 'strategic' mindset. In the foreseeable future, the IAF would continue to be a 'balanced air force', orchestrating all its air campaigns seamlessly and harmoniously as the war progresses and would be labelled as strategic or tactical, depending on the important mission objective. Doctrinally, a tactical fighter can carry out a strategic role, such as the MiG21 formation from 30 Sqn Rhinos attacking the East Pakistan Governor's palace in Dhaka during the 1971 war, which virtually terminated the war and created Bangladesh on our

terms — a strategic end, no doubt. From the days of the dedicated Canberra bomber aircraft in the late 1960s, practitioners of air power in the subcontinent and the Indo-Pacific have come of age. The IAF has since articulated and has a viable air power doctrine in place and expects to let that document dictate its operational stance in any future war.

So, to talk of putting in place a dedicated strategic bomber fleet at this stage of our evolution as an air power entity of some credibility would be rather naïve and a retrograde force accretion. Are we talking of expeditionary missions for the IAF, such as what the USAF had to undertake in Afghanistan post 9/11, in the Gulf air campaigns or possibly would need to do later if there's a standoff with the PLAAF over Taiwan? Or, are we looking at prosecuting an air war in tune with what the Union War Book dictates as the roles and missions of the IAF?

It is my strong belief that the IAF should continue with its present envisaged acquisition plans centred around SU30s, Rafales and the AMCA (Advanced Multi-Role Combat Aircraft) to be able to prosecute all our air campaigns effectively. The counter-air campaign could be addressed by the SU30s, Mirages and Rafales, whilst the Tejas, Jaguars and MiG 27s would handle the counter-surface forces and maritime missions. The Rafales and the SU30s (with augmented refuelled ranges) could well take on the strategic air campaign as envisaged for targets in our areas of interest. Earmarking a certain number of longer-range fighter assets for the SFC may not be a bad idea, no doubt. But those assets are not meant to be divorced from the overall air tasking for the Chief of the IAF and could well be switched to other tasks or targets, as a dynamic war situation warrants.

The Russia-Ukraine war has shown how a determined air force, albeit beefed up materially by supporting allies, can hold out and achieve considerable aerial success against a much stronger adversary. Of course, it has been a limited war to an extent and strategic targets were not engaged, other than some old nuclear power plants or formation headquarters. The railways and hydel power stations have been largely left undamaged.

So, in any future IAF air campaign planning, the focus needs to be on target-specific aerial missions in the strategic domain to break the enemy's will to fight. Choosing the otherwise redundant or inapplicable strategic bomber route will be infructuous in getting us the desired operational answers.

<https://www.tribuneindia.com/news/comment/strategic-bomber-route-not-needed-for-sfc-428949>

THE ECONOMIC TIMES

Tue, 06 Sep 2022

Army Chief Hands Over Military Equipment To Nepal Counterpart

Army chief Manoj Pande was conferred a traditional honorary rank during his first visit to Nepal on Monday. He handed over military equipment, including mine protected armoured vehicles, to his counterpart. The honorary rank of General of the Nepal Army was conferred on Pande by President Bidya Devi Bhandari at a ceremony in Kathmandu. The tradition goes back to 1950, with the Nepalese Army chief also conferred the title of General of the Indian Army.

Pande met the top Nepalese leadership and handed over 10 mine protected vehicles, artillery equipment, horses and medical equipment during the visit. "General Manoj Pande handed over various non-lethal military items to General Prabhu Ram Sharma," the Nepalese Army spokesperson said.

Besides talks on bilateral issues and regional security, the visit is expected to clear the air on the Agnipath recruitment scheme. The Indian Army recruits soldiers for its Gurkha battalions from Nepal and has already sent a request for the intake process to commence under the new scheme.

The Nepalese government is believed to have raised concerns about the new scheme, which is a radical change from the traditional regular intake of soldiers. Recruitment rallies have not yet commenced in Nepal, with political parties raising concerns about the modified entry scheme. Pande's visit is expected to bring some clarity on the issue.

<https://economictimes.indiatimes.com/news/defence/army-chief-hands-over-military-equipment-to-nepal-counterpart/printarticle/94012383.cms>



Mon, 05 Sep 2022

Ukraine PM Asks EU for Missile and Air Defence, Offers Gas Supplies

Ukraine's Prime Minister Denys Shmyhal urged the European Union on Monday to supply Kyiv with more weapons and equipment while offering to help out with gas deliveries to reduce the bloc's dependence on Russia.

"We need more modern weapons, such as air defence, missile defence and ship defence," Shmyhal told reporters after a meeting of the EU-Ukraine Association Council in Brussels.

He said his country also needed aircraft and more armoured vehicles as there were no signs Russia was willing to end the war that Moscow describes as a "special military operation".

A week ago, after months of punishing Russian artillery assaults in the east, Ukraine began a long-awaited counter-attack, its biggest since it drove Russian forces away from the outskirts of Kyiv in March.

On Monday, Kyiv made its boldest claim yet of success on the battlefield, saying it had captured two towns in the south and one in the east, while European markets reopened in free-fall after Russia kept its main gas pipeline to Germany shut.

Shmyhal suggested Ukraine could deliver gas to the EU to ease an energy crunch that has driven prices to record-high levels.

"We can replace to a large extent the Russian imports," Shmyhal said.

"30 billion cubic meters is what we have in our gas stores, and we can offer some of it to our European partners in order to replace the Russian Federation in the unstable market," he said.

EU foreign policy chief Josep Borrell, meanwhile, pledged the bloc's continuous support to Kyiv, no matter "whatever threat, whatever blackmail" might be coming from Russia.

"We will provide our support politically, financially, humanitarian and militarily as long as it takes and as much as needed," Borrell said.

<https://www.news18.com/news/world/ukraine-pm-asks-eu-for-missile-and-air-defence-offers-gas-supplies-5896183.html>

Science & Technology News



Mon, 05 Sep 2022

ISRO, Australian Space Agency to Boost Bilateral Collaborations in Space Tech

Indian Space Research Organisation (ISRO) and Australian Space Agency (ASA), an entity that is responsible for the development of the country's commercial space sector, have decided to intensify their interactions with a view to developing and growing space technology markets for both India and Australia.

As a precursor to this, the space entities on Monday facilitated signage of half a dozen MoUs between Australian and Indian startups focused on space tech at Bengaluru Space Expo (BSX) in Bengaluru.

Australia's Space Machines Company has entered into a collaboration with Bengaluru-based aerospace and defence manufacturer Ananth Technologies on product integration, testing, technology development, and joint-space missions.

Australian startup HEX20 would work with Hyderabad-based Skyroot Aerospace to provide launch services, spacecraft avionics, and components to Australian Space Initiatives. Perth-based QL Space also partnered with Skyroot Aerospace to develop launch facilities in Australia and support joint mineral exploration missions in space.

QL Space has partnered with Chennai-based GalaxEye to develop a hybrid optic and radar payload to reduce the adverse environmental impact of critical mineral exploration in Australia. The Australian firm would also work with Bengaluru-based SatSure to build a satellite and AI-based solutions to support the agriculture, mining, and defence industries and apply this technology to the outer space environment.

Also, Australia's SABRN Health, Altdata, and India's DCube would work together on the development and integration of hardware, sensor technology, and software to provide health support to astronauts. "It's great to see so many commercial links developing in the domain of high technology among the space entities of both the countries," said ISRO Chairman, also

Secretary Department of Space (DOS), S. Somanath, while speaking at the inaugural session of the expo.

He said India (ISRO) appreciated the time, energy, and attention Australia has given to growing the space relationship with India and recognised Australian strengths in downstream applications. Led by Enrico Palermo, head of the ASA, Australia is participating in the expo with a 40-member delegation comprising representatives of federal and state governments, officials from large enterprises, startups, and academicians. “Our (India’s and Australia’s) commercial space sectors are at similar levels of development, making us perfect partners, said Mr. Palermo adding, “We also recognise the significance of India’s national space programme and are glad to be supporting the inspirational Gaganyaan human space flight mission.”

Mr. Palermo said the new India International Space Investment initiative would further cement the collaboration between the countries. ”This will unlock valuable opportunities for the two countries to partner in the space sector,” he added.

The establishment of a Consulate-General in Bengaluru from 2023 would allow Australia to further develop the space relationship, Mr. Palermo stated.

An active startup ecosystem focused on space tech

Commenting on the start-up scenario, Mr. Somanath said the country already has over 100 startups that were exploring diverse opportunities in the space technology sector.

“The new environment appeared extremely promising for the country considering the importance and potential of encouraging the production of satellites while boosting the participation of global customers,” he added.

According to the ISRO chief, new opportunities are opening up for handling space debris, making space cleaner besides fuelling satellites in orbit. In addition to that, the whole business of satellites, related to servicing and building infrastructure on the ground, offered more avenues.

Some 1,000 delegates from 15 countries are participating in the three-day biennial space expo that began on Monday. Over 100 companies are showcasing their expertise and products at the expo. Conferences are organised by the Confederation of Indian Industry (CII) under the theme ‘Nurturing New Space in India’, in association with ISRO, Indian National Space Promotion and Authorisation Centre (IN-SPACE), and NewSpace India Limited.

<https://www.thehindu.com/sci-tech/technology/isro-australian-space-agency-to-boost-bilateral-collaborations-in-space-tech/article65853736.ece?homepage=true>



Mon, 05 Sep 2022

HAL-L&T Consortium Bags Rs 860-Crore Contract to Build Five PSLV Rockets

A consortium of Hindustan Aeronautics Limited and L&T has won a Rs 860 crore deal from NewSpace India Limited (NSIL) to build five Polar Satellite Launch Vehicle (PSLV) rockets over a period of four years. After the techno-commercial evaluation of three bids, HAL-L&T

consortium had emerged as the technically qualified and the L1 bidder to undertake end-to-end production of PSLV. The contract was exchanged on Monday between HAL and NSIL during the inaugural session of the 7th Bengaluru Space Expo 2022 at the Bangalore International Exhibition Centre (BIEC), according to an official statement.

Over the years, ISRO's PSLV, has successfully performed more than 52 successful flights and the vehicle has since attained its operational status. ISRO formed a separate entity NewSpace India Limited with primary mandate of enabling Indian industries to scale up high-technology manufacturing and production base for meeting the needs of the Indian space programme.

As part of its mandate, NSIL had invited Expression of Interest (EoI) on August 16, 2019, for realization of five PSLV-XL Launch Vehicles by Indian industry. Based on competitive bidding, HAL led consortium emerged as the successful bidder.

"We have now signed the service level agreement with the industry for production," PTI reported citing an official of NSIL, a central public sector enterprise under the Department of Space (DoS) and commercial arm of the Indian Space Research Organisation (ISRO).

"May be in less than two years, we (the 52:48 HAL-L&T consortium) will be able to deliver the first rocket from the industry consortium, fully built by the industry, with appropriate hand-holding from ISRO," the official said.

According to the official, about 80 per cent of mechanical systems and 60 per cent of electronic systems of PSLV, the third generation launch vehicle of India, at present come from the industry. However, the remaining percentages in both the areas are highly complex.

The consortium will now be responsible for producing, assembling and integrating the launcher by making use of the existing ISRO facilities under GOCO (Government Owned, Contractor Operated) model.

<https://www.timesnownews.com/business-economy/companies/hal-It-consortium-bags-rs-860-crore-contract-to-build-five-pslv-rockets-article-94005605>



Tue, 06 Sep 2022

India to Design, Build Reusable Rocket for Global Market: ISRO

India has plans to design and build a new reusable rocket for the global market that would significantly cut the cost of launching satellites, a top government official said on Monday.

"...all of us want launches to be much cheaper than what we do today," Secretary in the Department of Space and Chairman of Indian Space Research Organisation (ISRO) S Somanath said.

Addressing the seventh 'Bengaluru Space Expo 2022' and later talking to reporters, he noted that at present it takes about USD 10,000 to USD 15,000 to put a one-kg payload into orbit. "We have to bring it down to USD 5,000 or even USD 1,000 per kg. Only way to do that is to make

the rocket reusable. Today in India we don't have reusable technology yet in launch vehicles (rockets)," Somanath said.

"So, the idea is the next rocket that we are going to build after GSLV Mk III should be a reusable rocket," he added at the inaugural session of the international conference and exhibition.

ISRO, Somanath said, has been working on various technologies, including the one demonstrated with Inflatable Aerodynamic Decelerator (IAD), last week. "We will have to have a retro-propulsion to land it (rocket back on earth)".

Combining these technologies, ISRO would like to design and build a new rocket which will be reusable, in partnership with industry, startups and its commercial arm NewSpace India Limited (NSIL).

"This is the idea and we are working on that idea. That idea cannot be ISRO's alone. It has to be an industry's idea. So, we will have to work with them in designing a new rocket, not only designing it, engineering it, manufacturing it and launching it as a commercial product and operating it in a commercial manner," he said.

"So, it's a big shift from what we do today," he pointed out. "I would like to see this (proposal) taking shape in the next few months." "We would like to see such a rocket, a rocket which will be competitive-enough, a rocket that will be cost-conscious, production-friendly which will be built in India but operated globally for the services of the space sector. This should happen in the next few years so that we can retire all those operating launch vehicles (in India) at appropriate time," he said.

<https://indianexpress.com/article/technology/science/isro-indian-reusable-rocket-launch-vehicle-8133682/>

