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समाचार पत्रों से चयित अंश
Newspapers Clippings

डीआरडीओ समुदाय को डीआरडीओ प्रौद्योगिकियों, रक्षा प्रौद्योगिकियों, रक्षा नीतियों, अंतर्राष्ट्रीय संबंधों और विज्ञान एवं प्रौद्योगिकी की नूतन जानकारी से अवगत कराने हेतु दैनिक सेवा

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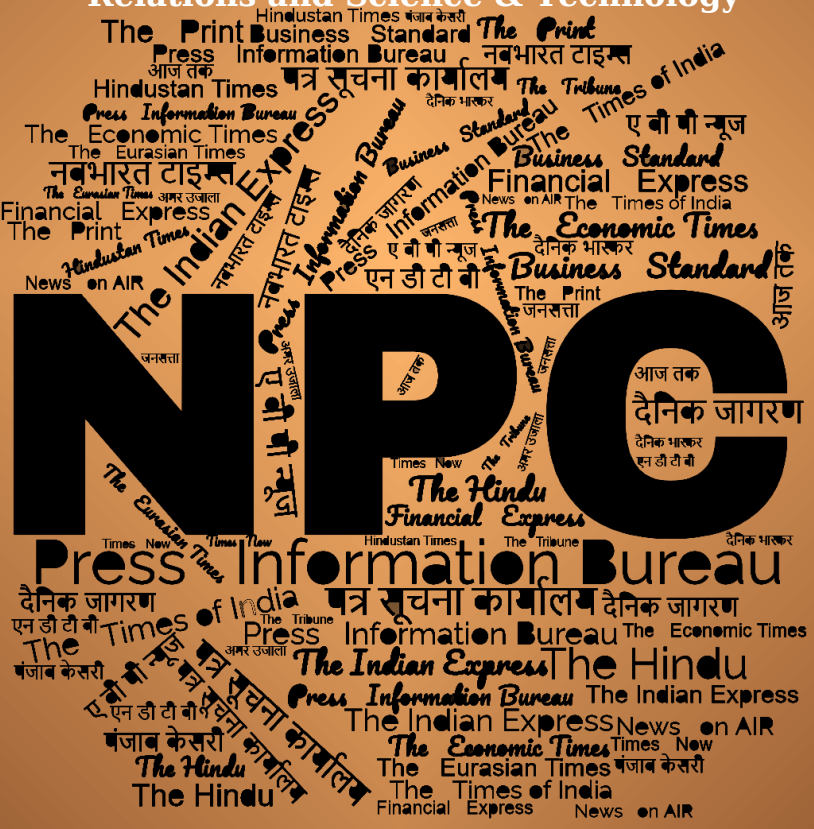

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CONTENTS

DRDO News

DRDO Technology News

R.भारत

Sun, 21 May 2023

चीन का काल, पहुंच रहा लद्दाख; DRDO के बनाए इस टैंक से थर-थर कापेंगे दुश्मन

रक्षा अनुसंधान एवं विकास संगठन (DRDO) और प्राइवेट सेक्टर की फर्म लार्सन एंड टुब्रो (L&T) ज्वाइंट प्रोजेक्ट में भारतीय सेना (Indian Army) के लिए एक लाइट टैंक 'जोरावर' डेवलप कर रहे हैं। टैंक चीन की सीमा के पास ऊंचाई वाले पहाड़ों में टेस्टिंग के लिए तैयार है। इस टैंक की टेस्टिंग 2023 के अंत तक शुरू होगी।

DRDO के सीनियर अधिकारियों ने कहा कि इस साल के अंत तक इन टैंकों के टेस्टिंग के लिए तैयार होने की उम्मीद है। एक बार तैयार होने के बाद, उन्हें तुरंत भारतीय सेना के लिए लद्दाख सेक्टर में तैनात किया जाएगा। जोरावर टैंक के सभी आवश्यक विशिष्टताओं के साथ तैयार होने के बाद भारतीय सेना अपना यूजर टेस्ट करेगी।

लाइट टैंक 'जोरावर'

DRDO ने इंडिन लाइट टैंक 'जोरावर', या AFV-ILT, एक लाइट टैंक का हाइब्रिड और एक हाई पावर-वजन अनुपात के साथ मजबूत वेपन, सुरक्षा, सर्विलांस और कम्युनिकेशन क्षमताओं वाला एक आर्मर्ड कॉम्बैट वेहिकल है। इसका उद्देश्य भारतीय सेना को अपने दुश्मनों के खतरों और हथियारों के खिलाफ अलग-अलग इलाकों में ऑपरेशन करने की कैपेबिलिटी को बढ़ाना है।

लद्दाख में चीन से साथ हुई झड़प के बाद भारत ने लाइट टैंकों के प्रयोग को बढ़ा दिया है। इस टैक का वजन 25 टन है और इसके क्रू में तीन सदस्य शामिल हो सकते हैं।

किसके नाम पर रखा गया है जोरावर नाम

भारतीय सेना की इस जोरावर टैंक का नाम जनरल जोरावर सिंह कहलूरियम के नाम पर रखा गया है। उन्होंने चीन-सिख युद्ध के दौरान 1841 में कैलाश मानसरोवर के मिलिट्री ऑपरेशन को लीड किया था। 2020 में भारत-चीन के बीच हुई झड़प के दौरान लद्दाख सेक्टर में चीनी सेना ने अपने ZTZ-04-A चीनी लाइट टैंकों का उपयोग किया था। लाइट टैंक भारतीय सेना को चीनी खतरों को चुनौती देने और इन टैंकों की अपार मारक क्षमता दिखाने के लिए हिमालय के थिएटरों में काम करने में आसानी देंगे। शुरुआत में भारतीय सेना ने इन टैंकों को रूस से खरीदने का फैसला किया। लेकिन सितंबर 2022 में इस बात की पुष्टि हुई कि L&T को उसके देसी माउंटेन टैंक के डेवलपमेंट पार्टनर के तौर पर चुना गया है, जो फिलहाल ट्रायल के लिए तैयार है। इस टैंक की क्षमताओं में आर्टिफिशियल इंटेलिजेंस (AI) का उपयोग, हाई सिचुएशनल अवेयरनेस के लिए स्वार्म ड्रोन के साथ इंटीग्रेशन, अटैक इम्पैक्ट के लिए गोला-बारूद और आधुनिक एंटी-आर्मर सिस्टम के खिलाफ एक एक्टिव सिक्योरिटी सिस्टम शामिल है। DefExpo2022 में इस टैंक को इनोग्रेट किया गया था। DRDO अभी 59 टैंक बना रहा है, यह संख्या 600 तक जा सकती है। LAC पर चीन के साथ हुए गतिरोध के बाद, भारत को हल्के टैंकों की जरूरत महसूस हुई, इससे पहले भारत ने अपने स्टैंडर्ड T-72 और T-90 भीष्म टैंकों का इस्तेमाल किया था। इसने भारत को ड्रैगन पर एक टैक्टिकल बढ़त दी और भारतीय सेना ने चीन को बैकफुट पर धकेल दिया।

https://bharat.republicworld.com/india-news/general-news/zorawar-light-tank-developed-by-drdo-testing-in-ladakh-will-start-soon

THE ECONOMIC TIMES

Fri, 19 May 2023

DRDO Light Tank 'Zorawar' to be Ready for Trials by Year-End Along China Border

The light tank Zorawar being jointly developed jointly by the DRDO and private sector firm L&T is expected to be ready for trials in the high-altitude mountainous border with China by the end of this year. "The tank is expected to be ready for trials by the end of this year and would be immediately sent to the Ladakh sector for our own trials. Once we are ready, we will hand it over to the Army for user trials," senior DRDO officials told ANI.

"The present order is for 59 of these tanks but the order can go up to 600 tanks. There is also a need being felt for using these tanks for operations in the Rann of Kutch area and the desert terrain where they can travel at high speeds," the officials added.

The need for the light tank was felt during the ongoing standoff with China in 2020 when the People's Liberation Army showed up along the Line of Actual Control with their light tanks which can travel and manoeuvre faster than the conventional tanks.

The tank has been named after the legendary General Zorawar Singh who led multiple successful victories in Tibet which is now controlled by the Chinese Army.

After the standoff started, the Indian Army had to induct a considerable number of T-72 and T-90 tanks in operational areas, gaining tactical surprise over the adversary and thereby forcing the adversary on a back foot.

https://economictimes.indiatimes.com/news/defence/drdo-light-tank-zorawar-to-be-ready-for-trials-by-year-end-along-china-border/articleshow/100356991.cms?from=mdr

Defence News

Defence Strategic: National/International

THE HINDU BusinessLine

Fri, 19 May 2023

‘Consistent Efforts’. For the First Time, India’s Defence Production Crosses ₹1 lakh Crore

India’s defence production has crossed ₹1 lakh crore for the first time in FY23, a jump of more than 12 per cent over FY22. The exceptional performance showed consistent efforts of the Ministry

of Defence (MoD) towards aatmanirbharta or self-reliance is paying off well for both public sector undertaking as well as private industry, believe ministry officials.

The defence production value currently stands ₹1,06,800 crore and it will go further up once the data is received from the remaining private defence industries, said MoD on Friday. The latest figure of defence production in FY23 is a rise of more than 12 per cent over FY22, when it was ₹95,000 crore, the ministry stated.

Appreciating the performance, Defence Minister Rajnath Singh tweeted, “MoD is actively working with stakeholders to removing the challenges facing the industry and given them solutions.”

Under the leadership of PM Shri @narendramodi, India's Defence production has crossed Rs 1 lakh crore mark for the first time ever.

MoD is actively working with the stakeholders to remove the challenges facing the industry and giving them solutions. https://t.co/SHcJt12HJ7

— Rajnath Singh (@rajnathsingh) May 19, 2023

MoD’s policy reforms

The ministry observed that the financial growth is an outcome of a number of policy reforms have been taken to achieve the objective of ease of doing business, including the integration of MSMEs and start-ups into the supply chain.

Due to these policies, the industries, including MSMEs and start-ups, are forthcoming in defence design, development, and manufacturing. There is almost a 200 per cent increase in the number of defence licenses issued to industries in the last 7-8 years by the government. These measures have given a boost to the defence industrial manufacturing ecosystem in the country and generated tremendous employment opportunities, the ministry remarked.

Budgetary allocation

To give fillip to self-reliance, government allocated a record 75 per cent, which is approximately ₹1 lakh crore, of the defence capital procurement budget for domestic industry in the current financial year, up from 68 per cent in FY23.

The defence budget for FY24 has been pegged at ₹5,93,537.64 crore, which is 13.18 per cent of the total budget of the India.

https://www.thehindubusinessline.com/news/national/for-the-first-time-indias-defence-production-crosses-1-lakh-crore/article66869480.ece

THE TIMES OF INDIA

Sat, 20 May 2023

Value of Desi Defence Production up 12%, Crosses Rs1 lakh Crore Mark

The value of India's domestic defence production crossed the Rs 1 lakh crore mark for the first time in 2022-23, which is 12% higher than the preceding financial year, the defence ministry said on Friday. The value of defence production currently stands at Rs 1,06,800 crore for the 2022-23 fiscal. "It will go further up once the data is received from the remaining private defence industries. The figure was Rs 95,000 crore in the 2021-22 fiscal," an MoD official said.

The government is working with defence industries and their associations to remove the challenges faced by them and promote defence production in the country, he said. "Due to a number of policy reforms aimed at the ease of doing business, industries including MSMEs and start-ups are coming forward in defence design, development and manufacturing. There is almost a 200% increase in the number of defence licenses issued to the industries in the last 7-8 years by the government," the official said.

India's export of arms and defence technologies also reached an all-time high of Rs 15,920 crore in the 2022-23 financial year, which represents a ten-fold increase since 2016-17.

It will, however, take a lot more for the government to achieve its target of a domestic turnover of Rs 1,75,000 crore in the defence and aerospace sector, including exports of Rs 35,000 crore, by 2024-25. India continues to remain in the strategically-vulnerable position of being the world's largest arms importer, accounting for 11% of the total global imports in 2018-2022.

https://timesofindia.indiatimes.com/india/value-of-desi-defence-production-up-12-crosses-rs1-lakh-crore-mark/articleshow/100367506.cms

Hindustan Times

Sun, 21 May 2023

IAF Grounds MiG-21 Fleet for Safety Checks After Rajasthan Crash

The Indian Air Force has grounded its MiG-21 fighter fleet for safety checks following a crash in Rajasthan on May 8, officials familiar with the matter said on Saturday. Three women were killed after the MiG-21 Bison fighter jet crashed into a house in Hanumangarh, with the accident again putting the spotlight on the troubling safety record of India’s longest-serving fighter plane.

“The MiG-21 Bisons are currently not flying as the fleet is undergoing comprehensive safety checks after the May 8 crash. The fighters will resume flying in a phased manner after these checks and the completion of the inquiry into the latest crash,” said one of the officials cited above, who asked not to be named.

On May 8, the pilot faced an onboard emergency shortly after taking off from the Suratgarh air force station and attempted to recover the aircraft but failed to do so. It was on an operational training sortie. The aircraft wreckage fell on a house at Bahlol Nagar in Hanumangarh. The pilot ejected safely and was recovered about 25 km north-east of the Suratgarh base.

It is not uncommon for an aircraft fleet to be grounded for inspection after an unexplained crash or incident. But the MiGs have been a cause of concern for some time now. More than 400 MiG-21s have been involved in accidents that have claimed the lives of 200 pilots during the last six decades.

A spate of crashes, many of them fatal, prompted the Indian Air Force last year to announce that it will phase out the MiG-21 Bisons by 2025, having ostensibly been unable to do so in order to maintain adequate number of combat aircraft in service. It is welcome that the force has grounded these jets, notoriously nicknamed “flying coffins” at one point, and that it is working on quickly arranging for enough replacements to maintain combat readiness. The IAF is set to retire its three remaining squadrons of the MiG-21 Bisons by 2025, the officials said. Each squadron has 16 to 18 fighter planes. The MiG-21 Bis (an upgraded MiG-21 variant flown for the first time in 1976) was further upgraded to MiG-21 Bison in India in 2000.

"I am happy that the government has decided to phase out the MiG-21s by 2025 and I hope this deadline doesn't change," Air Marshal Anil Chopra (retd), director general, Centre for Air Power Studies, said after the May 8 crash.

The planes have been grounded at a time when most of the military's advanced light helicopters (ALHs) are also grounded for comprehensive checks after a string of recent incidents including the crash-landing of an army helicopter in Jammu & Kashmir's Kishtwar on May 4 in which a soldier was killed, and two pilots were injured. The army, IAF, navy, and coast guard operate more than 330 ALHs.

HT reported on May 10 that a design review of a "safety-critical system" on the ALH may be in order, according to a top government regulatory body responsible for the certification of the airworthiness of military aircraft. The Bengaluru-based Centre for Military Airworthiness and Certification (CEMILAC) wrote to the three services and the coast guard about this on April 23. It has ordered the design review of the booster control rods to improve the ALH's airworthiness.

The IAF got its first single-engine MiG-21 in 1963 and it progressively inducted 874 jets (different variants of the Soviet-origin supersonic fighter) to bolster its combat potential.

Of the 874 MiG-21s inducted, more than 60% were licence-produced in India. More MiG-21s have crashed than any other fighter because they formed the bulk of the fighter aircraft in the IAF's inventory for a long time, the officials said. IAF has had to keep its MiG-21 fleet flying longer than it would have liked because of the delay in the induction of new fighters.

The IAF retired MiG-21 Bisons at the Srinagar-based No. 51 squadron, which is also known as "Sword Arms," last September.

Wing Commander (now Group Captain) Abhinandan Varthaman, who was awarded Vir Chakra for shooting down a Pakistani F-16 during a dogfight over the Line of Control on February 27, 2019, was with the No. 51 squadron then.

The dogfight took place a day after the IAF bombed a terror facility in Pakistan's Balakot.

IAF's Mirage-2000s struck targets in Balakot on February 26, 2019, in response to the Pulwama suicide attack in Kashmir in which 40 Central Reserve Police Force (CRPF) personnel were killed 12 days earlier.

https://www.hindustantimes.com/india-news/indian-air-force-grounds-mig-21-fighter-fleet-for-safety-checks-after-crash-in-rajasthan-kills-three-women-101684608178500.html

FINANCIAL EXPRESS
Read to Lead

Sat, 20 May 2023

Nuts and Bolts of Indigenisation in Defence

By Amit Cowshish

Pressing on with the unavailing praxis it started more than a year ago, Ministry of Defence (MoD) notified the fourth 'Positive Indigenisation List' of 928 'strategically important' items on May 12 to give further impetus to Atmanirbharta, or self-reliance, in defence production. These items will be indigenized by various Defence Public Sector Undertakings (DPSUs) in phases by December 2027, either through in-house efforts or by enlisting private sector manufacturing units, including the Micro, Small and Medium Enterprises.

The first three lists notified in December 2021, March 2022, and August 2022 contained 2,500 items which had already been indigenized by the DPSUs and another 1,238 items which were yet to be indigenised by them. Of these, 236 items have since been indigenized according to PIB's Press Release of May 16, 2023.

Like the previous lists, the fourth list includes line replacement units, sub-systems, spares, and components, but it also includes some high-end materials which will be indigenized by the state-owned Mishra Dhatu Nigam Limited (MIDHANI) for use in the manufacturing of air-borne and space platforms.

The 'import-substitution value' of the newly notified items is estimated to be ₹ 715 crore. While this saving in foreign exchange outgo is not insubstantial, it is unclear if the cost of procuring the corresponding indigenized items will be less than the cost of imports. In any case, the Indian companies stand to benefit as the indigenized items will be sourced by the DPSUs only from them.

About 95% of the listed items are to be indigenised by Mazagaon Docks Limited, and the rest by Hindustan Aeronautics Limited, Garden Reach Shipbuilders & Engineers, Hindustan Shipyard Limited, Goa Shipyard Limited, Munitions India Limited and Mishra Dhatu Nigam. Clearly, the latest round of indigenisation effort is driven by four public sector shipbuilders.

Barring a few items like various grades of titanium, the latest list, much like the earlier ones, contains a large number of seemingly not-so-high-end items like gaskets, bearings, seals, rings, pins and nipples, nuts and bolts, washers, cords, flanges, couplings, pipes, switchboard lamps, tubes, weights, tyres, thermometers, and stopper plates.

Giving a somewhat mysterious twist to the list are a few items whose nomenclature is mentioned in the MoD notification in the Russian script; in fact, these items are washers, cables, bolts, pins and screws.

While pursuit of self-reliance in defence production through indigenisation is unexceptionable, it is arguable that indigenisation of nuts and bolts by the DPSUs is the expressway to achieving the goal. It is equally difficult to figure out how do these lists promote or hasten the process of indigenisation.

It is not as if the listed items -most of them, at any rate- are critical for self-reliance in defence production and the DPSUs would have continued to import them but for the directives by the MoD setting the timeframe for their indigenization through sporadic notifications. Any such presumption would amount to questioning the competence of SPSUs' top management. It also indicates the tendency on MoD's part to micro-manage the DPSUs.

It is obvious that the DPSUs themselves identified the items which were either already being indigenized or which they felt could be indigenized in the coming years and provided the details to the MoD for notification of the list.

Be that as it may, it is surprising that these low-end items had not been indigenised by the DPSUs so far. One plausible explanation is that it was not cost-effective for them to do so either on account of low volume of consumption or the high cost of indigenisation.

For commercial enterprises like the DPSUs, cost of production is an important factor, especially since they have to survive in a competitive environment where the customer, even if it is the MoD itself, is very particular about the quality of the product as well as its price.

Some studies indicate that indigenised items, especially in the initial phases of production, are not necessarily cheaper than the cost of imported items. This can push up the cost of production, which the customer may not be prepared to bear, especially if the cost goes up on account of indigenisation of components of a platform after the contract has been signed.

It is difficult to accept that despite the focus on import substitution in the last two decades, the DPSUs were merrily importing items whose indigenisation was cost-effective and posed no other insurmountable technical challenge. Consequently, whether an item should be indigenised or not is a decision best left to the DPSUs.

In the true sense, self-reliance in defence production depends on design and development of major platforms critical technologies, and special metals and alloys required for manufacturing major platforms and weapon systems, and not on indigenisation of nuts and bolts. Seen in this perspective, it is heartening that the latest list includes five different types of metals used in manufacturing air-borne systems.

https://www.financialexpress.com/business/defence-nuts-and-bolts-of-indigenisation-in-defence-3094869/

The Statesman

Sat, 20 May 2023

India, Indonesia Conclude Defence Drills in South China Sea

The fourth edition of the Indo-Indonesia bilateral Exercise Samudra Shakti-23 concluded in the South China Sea.

The sea phase held from 17-19 May witnessed the participation of ASW corvette INS Kavaratti with an integral Chetak helicopter and a Dornier Maritime Patrol Aircraft.

The Indonesian Navy assets included KRI Sultan Iskandar Muda with an integral helicopter Panther and a CN 235 Maritime Patrol Aircraft. A series of complex exercises including tactical manoeuvres, weapon firings, helicopter operations, Air defence and Anti-Submarine warfare exercises were undertaken that enhanced interoperability between the two navies.

The sea phase was preceded by a fruitful harbour phase which saw professional interactions, tabletop exercises and sports exchanges.

The successful completion of Exercise Samudra Shakti-23 illustrated the strong partnership between India and Indonesia and reaffirmed the commitment of both navies to promote peace and stability in the region through cooperative engagements.

https://www.thestatesman.com/world/india-indonesia-conclude-defence-drills-in-south-china-sea-1503183132.html

ThePrint

Fri, 19 May 2023

India Helps China Locate Missing Fishing Vessel that Capsized in Indian Ocean

Indian Navy's P-8I aircraft has managed to locate a Chinese capsized fishing vessel in the southern Indian Ocean Friday, three days after it went missing.

Indian Navy officers said the position of the capsized vessel was relayed to the Chinese People's Liberation Army Navy warships for further assistance.

Subsequently, the P-8I also sighted the fishing vessel's life raft and guided another fishing vessel, Lupeng Yuanyu 017, towards it.

The Navy added that the life raft was picked up by the Lupeng Yuanyu 017 which had by then reached the spot.

The Indian Navy is on standby to provide any additional assistance to the ongoing search and rescue (SAR) efforts, said officers.

On 17 May, Indian Navy had deployed its maritime reconnaissance assets in the southern Indian Ocean region, approximately 900 nautical miles from Indian shores, to locate the missing Chinese fishing vessel with 39 crew onboard.

The crew includes nationals from China, Indonesia and the Philippines.

The P-8I aircraft carried out multiple and extensive searches Wednesday despite adverse weather and located multiple objects possibly belonging to the sunken vessel.

As an immediate response, SAR equipment was deployed at the scene by the Indian aircraft at the request of PLA (N) ships closing in on the area.

Sources said Indian Navy units also coordinated SAR efforts with other units in the area and guided the PLA (N) warships transiting to the scene of the incident.

Countries such as Australia, Sri Lanka, Indonesia, the Maldives and the Philippines have also extended emergency assistance.

Incidentally, India's P-8I aircraft clocked 40,000 hours under the Indian Naval Air Squadron 312 Wednesday, marking a decade since its first flight in 2013. The squadron, also known as 'Albatross', operates out of the Arakkonam suburb of Chennai and the first P-8I aircraft landed at INS Rajali, the naval air station located near Arakkonam, on 15 May, 2013.

The P-8I is equipped for long-range anti-submarine warfare, anti-surface warfare, intelligence, surveillance and reconnaissance in support of broad area, maritime and littoral operations.

https://theprint.in/defence/india-helps-china-locate-missing-fishing-vessel-that-capsized-in-indian-ocean/1583822/

THE HINDU

Sat, 20 May 2023

India, South Korea Agree to Deepen Cooperation in Trade and Investment and Defence

Prime Minister Narendra Modi on May 20 held productive bilateral talks with South Korean President Yoon Suk Yeol during which they agreed to deepen cooperation in areas like trade and investment, IT hardware manufacturing and defence and reaffirmed their commitment to further strengthen bilateral ties.

They also discussed India's G20 presidency and South Korea's Indo-Pacific strategy.

The two leaders met on the sidelines of the summit of the Group of Seven (G7) advanced economies in Hiroshima.

"PM @narendramodi had a productive meeting with @President_KR Yoon Suk Yeol. India and the Republic of Korea share a warm friendship and deep-rooted cultural linkages. Today's talks focused on ways to further cement this friendship in key developmental sectors," the Ministry of External Affairs (MEA) tweeted.

"Advancing – Special Strategic Partnership. PM @narendramodi met @President_KR Yoon Suk Yeol of the Republic of Korea," it said.

During the meeting, they reaffirmed their commitment to further strengthen bilateral ties as the two nations celebrate 50 years of diplomatic relations this year, it said.

They agreed to deepen cooperation in areas of trade and investment, high technology, IT hardware manufacturing, defence, semiconductor, and culture, the ministry said.

They also discussed India's G20 presidency and South Korea's Indo-Pacific strategy, it said.

India is presently holding the presidency of the G20 grouping.

South Korea launched its first comprehensive regional strategy, the Indo-Pacific Strategy in December 2022.

The US, India and several other world powers have been talking about the need to ensure a free, open and thriving Indo-Pacific in the backdrop of China's rising military manoeuvring in the resource-rich region.

China claims nearly all of the disputed South China Sea, though Taiwan, the Philippines, Brunei, Malaysia and Vietnam all claim parts of it. Beijing has built artificial islands and military installations in the South China Sea. China also has territorial disputes with Japan in the East China Sea.

Modi arrived in Hiroshima on May 19 to attend three sessions at the G7 summit following an invitation by Japanese counterpart Fumio Kishida.

PM Modi, Vietnamese counterpart discuss expanding cooperation in trade and investment, defence, technology

Prime Minister Narendra Modi on Saturday held wide-ranging talks with his Vietnamese counterpart Pham Minh Chinh and discussed expanding cooperation in areas like trade and investment, defence and energy.

The two leaders met on the sidelines of the summit of the Group of Seven (G7) advanced economies in Hiroshima.

"Propelling - ties to new levels. Wide-ranging talks between PM @narendramodi and PM Pham Minh Chinh of Vietnam," the Ministry of External Affairs (MEA) tweeted.

"Leaders discussed expanding cooperation in the fields of trade and investment, defence, building resilient supply chains, energy, science & technology, human resource development, culture & people to people ties," it said.

Talks also covered regional developments as well as the Association of Southeast Asian Nations (ASEAN) and cooperation in the Indo-Pacific region, it added.

ASEAN nations include Brunei, Cambodia, Indonesia, Laos, Malaysia, Myanmar, the Philippines, Singapore, Thailand, and Vietnam.

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https://www.thehindu.com/news/national/india-south-korea-agree-to-deepen-cooperation-in-trade-and-investment-and-defence/article66873093.ece

moneycontrol

Sun, 21 May 2023

South Korea, Germany to Sign Information Pact to Boost Defence Cooperation

South Korea and Germany will soon sign an agreement aimed at protecting military secrets to boost defence cooperation, South Korean President Yoon Suk Yeol said on Sunday as he met with German Chancellor Olaf Scholz in Seoul.

The military information agreement will help "smoothly operate the defence industry supply chain", amid global economic and political instability, Yoon told a briefing.

South Korea, which recently pursued a similar information-sharing pact with Canada, has moved to expand its defence industry amid rising demand driven by the war in Ukraine and other global tensions, but has so far refused to provide weapons to Kyiv.

Yoon said respect for freedom as a universal value was "very vital" in the face of authoritarianism challenging democracy, unstable global supply chains and the war.

"From now, I expect South Korea and Germany will further expand reciprocal and future-oriented cooperation and strengthen the solidarity for peace and prosperity of Europe and Asia," Yoon said in opening remarks at the meeting with Scholz.

The two leaders also discussed deepening cooperation in production of semiconductors, among other areas.

Scholz, who is visiting South Korea after attending the Group of Seven (G7) summit in Hiroshima, Japan, called North Korea's missile tests a sign of a "still dangerous situation" on the Korean peninsula.

"This is a threat to peace and security in this region," he said at a military base after a visit to the Demilitarized Zone (DMZ) separating the Koreas.

Germany's history as a divided nation had been overcome, he said, but division persists on the Korean peninsula.

Both Scholz and Yoon left Japan on Sunday after joining the G7 summit. South Korea was invited as an observer.

G7 leaders signalled they would not back down from supporting Ukraine, and outlined a shared approach towards China, looking to "de-risk, not decouple" economic engagement with a country regarded as the factory of the world.

Yoon, who met Ukrainian President Volodymyr Zelenskiy for the first time on the sidelines of the G7, said he was planning to provide mine-removing equipment and ambulances, while promising more support for Ukraine.

South Korea signed an agreement with Ukraine on Wednesday on its plan to provide a $130 million financial aid package, a day after the visiting first lady of the war-hit country asked for military assistance.

South Korea, a major producer of artillery shells, has said it was not providing lethal weapons to Ukraine, citing its relations with Russia.

https://www.moneycontrol.com/news/world/south-korea-germany-to-sign-information-pact-to-boost-defence-cooperation-10631781.html

Science & Technology News

Hindustan Times

Mon, 22 May 2023

ISRO's Chandrayaan-3 Launch Likely on July 12

The Indian Space Research Organisation is expected to launch the third edition of its lunar mission, Chandrayaan-3, on July 12, officials of the space agency have said.

While Isro did not officially confirm the dates, a senior official, speaking on condition of anonymity, said the project is moving on track.

“The project is right on track, and the way things are moving, the launch is expected to be on July 12,” the official said.

“The lunar touchdown is likely on August 23,” the official said.

Last week, the space agency started the assembly process for the payloads for Chandrayaan-3, in a move aimed at ensuring the July launch, senior officials from the department of space said WHEN.

The payloads are being assembled at the UR Rao Satellite Centre (URSC) in Bangalore, from where it will be sent to the Sriharikota space port for launch. The mission will be launched on board the Geosynchronous Satellite Launch Vehicle (GSLV Mk-3).

“Hopefully, everything sticks according to the plan,” the official cited in the first instance said.

Chandrayaan-3 consists of an indigenous lander module, a propulsion module and a rover. The lander and the rover will have scientific payloads to carry out experiments on the lunar surface.

The mission objectives include developing and demonstrating new technologies required for interplanetary missions. The lander will have the capability to soft land at a specified lunar site and deploy the rover, which will carry out in-situ chemical analysis of the lunar surface during the course of its mobility.

The Chandrayaan programme, also known as the Indian lunar exploration programme, is an ongoing series of outer space missions by Isro.The first moon rocket, Chandrayaan-1, was launched in 2008, and was successfully inserted into lunar orbit.

Chandrayaan-2 was successfully launched and inserted into lunar orbit in 2019, but its lander "crash-landed" on the moon's surface when it deviated from its trajectory while attempting to land on September 6, 2019, due to a software glitch.

https://www.hindustantimes.com/india-news/indian-space-agency-plans-to-launch-chandrayaan-3-lunar-mission-on-july-12-with-indigenous-lander-and-rover-for-in-situ-analysis-101684694289735.html

THE HINDU

Mon, 22 May 2023

What are Reusable Launch Vehicles? Who's Using them? Does ISRO have one?

Inching closer to a fully reusable launch vehicle, the Indian Space Research Organisation (ISRO) successfully carried out the landing experiment of the Reusable Launch Vehicle-Technology Demonstration (RLV-TD) programme on April 2, 2023.

ISRO executed the landing experiment at the Aeronautical Test Range in Challakere, Chitradurga. The RLV was dropped by an Indian Air Force (IAF) Chinook helicopter from an altitude of 4.5 km. The vehicle performed approach and landing manoeuvres on the runway autonomously, under the conditions in which a re-entry vehicle from space might return — at high speed and without human inputs, to achieve a stable landing.

The success of this test marks yet another milestone in ISRO's mission to develop a fully reusable launch vehicle as part of its vision to enable low-cost access to space.

Currently, ISRO has three active launch vehicles: the Polar Satellite Launch Vehicle (PSLV), the Geosynchronous Satellite Launch Vehicle (GSLV), and the Launch Vehicle Mark-III (LVM3). The PSLV has four stages while the GSLVs have three stages each. Each stage has a different fuel, and is jettisoned when the fuel is expended as the rocket ascends.

What is a reusable launch vehicle?

Primarily, launch vehicles comprise three or four stages apart from the payload, which needs to be launched into a polar or a geosynchronous orbit, depending on a mission's requirements. In ISRO's three-stage rockets, the first — or lowermost— stage has a motor fuelled by solid fuel (in the GSLV, this can also be augmented by up to four liquid strap-on boosters); the second stage has the Vikas engine powered by liquid fuel; and the third and uppermost stage has a cryogenic engine, which uses liquid oxygen and liquid hydrogen.

In the four-stage PSLV, the first stage has a motor using solid fuel (augmentable with up to six solid-fuel strap-on boosters), the second stage has a Vikas engine, the third stage again has a solid-fuel motor, and the fourth stage has two liquid engines.

The RLV that ISRO is building has only two stages to propel the vehicle into orbit. Once the fuel in the first stage has been expended, the vehicle will shed it, and carry on with the second stage. Once it has been shed, the first stage will re-enter the atmosphere and land in an autonomous fashion at a pre-determined location. After some maintenance, it will be available for reuse.

Have RLVs been used in the past?

Since the 1960s, experts have conceived reusable rockets as a way to lower the cost of space missions. In the most idealised version, they imagined a single-stage-to-orbit rocket that could take off and land vertically.

The American aerospace manufacturing company McDonnell Douglas realised this dream in 1993, building the Delta Clipper (DC-X) to demonstrate lift-off, maintain altitude, and a landing on its tail. The project was later transferred to NASA's Reusable Launch Vehicle program after the cost of each test flight proved to be too expensive. In its twelfth flight in 1996, the DC-X crashed and burned on landing, extensively damaging its exterior chassis.

NASA later shelved the project due to budgetary constraints, bringing this chapter of the single-stage to-orbit launch vehicle to an end.

What reusable technologies are currently in play in spaceflight?

Several DC-X engineers subsequently moved to Amazon founder Jeff Bezos's space company Blue Origin. On November 23, 2015, Blue Origin's reusable space vehicle 'New Shepherd' successfully undertook a suborbital flight, reaching an altitude of 329,839 feet, and then performed a controlled landing back at its launch site in West Texas with the help of a parachute drop.

Perhaps the most famous player in the reusable spaceflight sector is is Elon Musk's SpaceX, founded in 2001. Both Blue Origin and SpaceX, among others, are developing rockets with reusable parts, especially the first stage, rather than the whole vehicle being reusable.

SpaceX initially attempted to salvage the rocket's first stage using parachutes; but the boosters would break before the parachutes were deployed.

Then came the Falcon 9 in 2010, a 54-metre-tall two-stage rocket with nine engines, capable of transporting cargo and crew to the International Space Station (ISS). Instead of using parachutes to recover the first stage, the Falcon 9 was equipped with retrograde thrusters, using which the first stage could come back down to a designated spot using its engines themselves.

Initially, Falcon 9 attempted soft landings in the ocean as they did not have a landing site. After several failures, on its 20th attempt, a Falcon 9 was launched with a light payload to the ISS. Ten minutes after launch, the first stage — its duty done — turned back down and descended smoothly at a landing pad at Cape Canaveral.

Thus far (May 19, 2023), Falcon 9 first stages have had 220 launches, 178 landings and 155 re-flights.

In addition to these companies, the Japan Aerospace Exploration Agency (JAXA), the United Launch Alliance (ULA), the European Space Agency (ESA), and ISRO have also been undertaking R&D on other aspects of reusable launch systems.

What is ISRO working on?

In 2010, ISRO began developing a winged reusable rocket, taking the first step towards realising a two-stage-to-orbit (TSTO) launch vehicle that could be fully reusable. On May 23, 2016, the winged vehicle successfully flew at hypersonic speed. It also withstood fiery re-entry temperatures as it re-entered, qualifying its thermal protection systems, before it touched down at a pre-determined site 425 km east of Sriharikota, in the Bay of Bengal.

While several other related technologies have been tested through the years, ISRO's RLV's autonomous landing was only tested successfullyon April 2, 2023.

Currently, ISRO is working on the 'Orbital Re-entry Experiment' (ORE), which will be taken to orbit by a modified launch vehicle comprising existing GSLV and PSLV stages. The vehicle will

stay in orbit for a stipulated period, re-enter, and finally land autonomously on a runway, with landing gear.

https://www.thehindu.com/sci-tech/science/explained-what-is-a-reusable-launch-vehicle-who-is-using-it-now-how-far-along-is-india/article66835126.ece

THE TIMES OF INDIA

Sun, 21 May 2023

Medical Marvel: AI can go where Humans can't

Artificial intelligence (AI), despite the obvious anxieties about its capacity to create job losses, is slowly and steadily gaining ground in the medical world.

Doctors say AI has truly revolutionised the medical field and changed the way healthcare is approached.

Dr Rajeev Kumar, professor of urology and associate dean of academics at AIIMS Delhi, said that AI had future potential use in medicine and healthcare. "AI is already being used for interpretation of images like X-rays, CT scans, MRI, etc., because it is easy to train AI tools to read images," he said.

"It is quicker and more consistent than humans at triage because humans might not appreciate all features of every image, particularly when the turnaround time has to be short, but AI has been trained to look at all those features."

In fact, AI algorithms are often able to pick up features that humans cannot even read. "While evaluating images, there could be a difference of opinion among physicians. Machines, in some such cases, may be able to resolve the difference because of their consistent algorithms," said Kumar.

He added, "As of now, we are not dependent on AI to make a diagnosis, but we use its features." The only form of AI currently used in urology is in nomograms and algorithms to predict the possible outcomes of patients suffering from the disease. However, AI is expected to have a major role in the future, particularly in the reporting of MRI for prostate, bladder and kidney cancers, suggesting treatment options and predicting outcomes for diseases. "AIIMS Delhi has been designated a Centre of Excellence for AI in healthcare by the Union health ministry. The faculty of the departments there have started projects in three broad areas using image recognition: radiology (evaluating chest X-rays), dermatology (skin lesions) and ophthalmology (corneal and retinal lesions). We hope these tools will be ready soon for deployment," said Kumar.

Dr Meinal Chaudhry, director, radiodiagnosis and intervention radiology, Aakash Healthcare, explained where AI has advantages. "With the help of AI, we can check the quality of an image whether it is reportable or not, which means even when the image is poor we don't have to recall the patient again for another imaging. This is a huge value addition for the patient," said Chaudhry.

The second advantage of AI, Chaudhry added, was the prioritisation of critical X-ray reporting. "AI can tell us which cases are critical and need immediate attention because they might be life threatening," she said. She said AI can also analyse the trends of the previous X-rays. When a patient comes to the radiology department for X-ray, an AI software will see all images taken earlier too and prompt if something appears noticeable.

Explaining this, she gave the example of the detection of life-threatening pneumothorax, when the air collects in between the parietal and viscera pleura resulting in the lungs collapsing. Sometimes some air leaks into the pleural cavity and collapses the lung, so there is a very thin line between normal air intake and pneumothorax. “AI can prompt an alert to the radiologist if a pleura is there and get it diagnosed as soon as the X-ray is taken. It is definitely a lifesaving algorithm,” said Chaudhry.

AI is being used for preventive health check-ups like chest X-ray and spine MRI, said Kabir Mahajan, associate director of Mahajan Imaging. “If an X-ray report is normal and processed by AI, it automatically sends a report to the radiologist, who either accepts it or edits the report. But if AI detects something abnormal, it puts markers on the X-ray so that the radiologist knows what to look out for or consider,” said Mahajan. This helps the radiologist arrive at a more informed decision when writing his final report.

AI is also being used in CT scan, reducing the scan time to 30% without compromising on the quality. “The scan is done within 10 mins, providing less discomfort to patients and also allowing the hospitals to conduct more scans in a day,” said Mahajan. “We have been doing this since 2019 but in different formats. Through AI, we are picking up more abnormalities but the price of tests remains the same for patients and they are getting more value for their money.”

Dr Mohinish Chhabra, director, gastroenterology, Fortis Hospital, Mohali, said that AI was useful in the screening of colorectal cancer, which is the fifth leading cancer in India and claims several lives every year. He said, “We were the first to launch an AI screening device to detect pre-cancerous growth called polyps/adenomas, which usually take 10-15 years to become cancerous. So, if polyps are detected and removed at an early stage, the risk of cancer decreases by up to 90% and the probability of early death goes down.”

The gastroenterologist said that it had been estimated that 55-60% of all cancer cases of this type occurred due to polyps missed by a colonoscopy. “AI is a boon in colon cancer screening as this tool doubles the detection of polyps measuring less than 10mm. They can be identified and removed during the colonoscopy procedure,” he said. There are a few cancers in the body that can be prevented. These include cervical and colon cancer. Other cancers can be detected early like breast cancer but only after it has developed. So the major difference is in detecting an early cancer and detecting pre-cancer which can later turn into cancer.

Dr Sajjan Rajpurohit, director medical, oncology, Max Superspeciality Hospital, Shalimar Bagh, said AI technology had made a significant transformation in precision medicine. “AI technology has made it simpler to identify the efficacy of drugs for individual patients. In the field of oncology drug discovery, AI has enabled the identification of patients with specific genetic mutations, allowing targeted drug treatments,” explained Rajpurohit.

He added, “Besides, AI tools aid doctors in predicting patient outcomes, enabling them to make tailor treatments for better results. Early detection is crucial in cancer treatment, and AI-enabled mammograms and metabolomics-based blood sample analysis are proving vital in detecting breast cancer early. With AI technology making healthcare more accessible, efficient and effective, the future of medicine looks brighter than ever before.”

Gynaecologist Rahul Manchanda at PSRI Hospital, said AI was being used in many fields including gynaecology and women’s health. “The data fed in the computer and machines helps in forming algorithms to diagnose complex problems and then treat them with precise management through minimally invasive surgical techniques and robotic surgery,” said Manchanda. ‘Since all endoscopic and robotic surgical techniques involve computers as an image transfer system, deep learning methods help with more precise surgery with these systems.”

AI incorporation helps in minimally invasive surgical techniques like laparoscopy and hysteroscopy being more precise. AI guides doctors in avoiding complications and hence promise better results of surgery for the patient and better patient outcomes. However, robotic surgery goes one step further with AI improving the range of movement and the preciseness. This decreases complications and blood loss further. Robotic surgery is, of course, ergonomic for the surgeon too because he or she can sit comfortably in front of a computer screen guiding the robot precisely.

https://timesofindia.indiatimes.com/city/delhi/medical-marvel-ai-can-go-where-humans-cant/articleshow/100386391.cms