



E-NEWS

EVERY MONTH FROM THE AERONAUTICAL SOCIETY OF INDIA

VOLUME - 17

AUGUST 2022

RELEASE - 08

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Covering the Period from
(01 July to 31 July 2022)



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**HAL and Safran to Develop new
Helicopter Engines in Joint Venture**



Publisher

Journal of Aerospace Sciences
And Technologies
The Aeronautical Society of India
Bangalore Branch Building
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Advertisement – Tariff

A4 – 1 Full Page : Rs. 2000
Draft Drawn in Favour of
“Journal Office, The Aeronautical
Society of India” Payable at
Bangalore

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DRDO Flight Tests New Autonomous Flying Wing Technology Demonstrator

The Defence Research and Development Organisation (DRDO) successfully carried out the maiden test flight of a new Unmanned Aerial Vehicle (UAV), an autonomous Flying Wing Technology Demonstrator, from the Aeronautical Test Range, Chitradurga, Karnataka. “Operating in a fully autonomous mode, the aircraft exhibited a perfect flight, including take-off, way point navigation and a smooth touchdown,” DRDO said in a statement. “This flight marks a major milestone in terms of proving critical technologies towards the development of future unmanned aircraft and is significant step towards self-reliance in such strategic defence technologies.” It is a reduced sized autonomous aircraft and is proving various technologies for autonomous aircraft to be built in future, a DRDO official explained. The Unmanned Aerial Vehicle (UAV) is powered by a small turbofan engine. The airframe, undercarriage and entire flight control and avionics systems used for the aircraft were developed indigenously, DRDO said. The engine is Russian TRDD-50MT originally designed for cruise missiles. “A small turbo fan engine is being developed indigenously for meeting the requirement,” another official told The Hindu. The UAV was designed and developed by Aeronautical Development Establishment (ADE), Bengaluru, a premier research laboratory of DRDO. DRDO is in the process of developing UAVs of different classes to meet the requirements of the armed forces. Rustom-2, the indigenous Medium Altitude Long Endurance (MALE) UAV under development, had crossed a milestone by reaching an altitude of 25,000 feet and an The autonomous Flying Wing Technology Demonstrator 4 endurance of 10 hours in December 2021 and is being designed to reach an altitude of 30,000 feet and 18 hours endurance. An Unmanned Combat Aerial Vehicle is also on the drawing board.



Source: <https://www.thehindu.com>

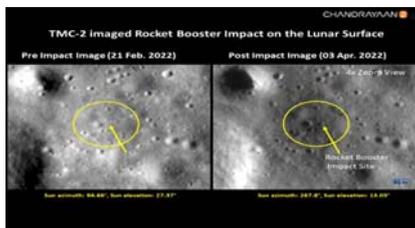
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CURRENT AFFAIRS

TMC-2 onboard Chandrayaan-2 imaged

On 4th March 2022, a spent rocket booster hit the lunar surface near the Hertzprung crater, which is in the far side of the Moon. The impact created a double crater which is ~28m wide. Terrain Mapping Camera – 2 (TMC-2) onboard Chandrayaan-2 imaged the far side of the Moon in April 2022 and identified the impact site. The above image shows the comparison between the regions which is imaged before impact (21st February 2022) and after impact (3rd April 2022). The yellow arrow mark indicates the new crater formed due to the impact. The spatial resolution of TMC-2 is 5m and the image is zoomed four times.



Source: <https://www.isro.gov.in/>

Dedication of ISRO System for Safe & Sustainable Operations Management (IS4OM) to the nation

Honorable Minister Dr. Jitendra Singh Ji dedicated ISRO System for Safe & Sustainable Operations Management (IS4OM) to the nation today in Bengaluru. Chairman, ISRO Shri S. Somanath, Former chairmen Dr. Radhakrishnan, Shri Kiran Kumar and Dr. Sivan graced the occasion. IS4OM is ISRO's holistic approach to ensure the safety of our space assets and thus, sustains the utilization of outer space for national development. In response to ever-growing space object population and the risk of collisions in space, it undertakes observation and monitoring of space objects and space environment, processing the observations for orbit determination, object characterization and cataloging, analysis of space environment evolution, risk assessment and mitigation, and, data exchange and collaboration. The system safeguards all Indian Space assets by mitigating the collisional threats from space objects through specific orbit maneuvers and complying to international guidelines on post mission disposal and satellite's end-of-life operations.

Source: <https://www.isro.gov.in/>

India has been put on the world Aeronautics by HAL says , Air Marshal Philip Rajkumar (Retd)

Having started its journey in Bengaluru, Hindustan Aeronautics Limited (HAL) is not only synonymous with India's giant leap in the aeronautical industry but also with the Karnataka capital. With the aim of manufacturing aircraft in India, Hindustan Aircraft Limited was established on December 23, 1940, in Bengaluru by Seth Walchand Hirachand with financial support provided by the then Government of Mysore. Air Marshal Sir John Higgins became the resident director and the first aircraft, Harlow PC-5, was assembled under American licence and flown in August 1941. A year after, the Indian Government became one third shareholder of the company and took over its management in 1942. Two of its six directors were nominated by the Mysore government. In 1951, the Indian government placed Hindustan Aircraft Limited under the administrative control of the Ministry of Defence. Recalling the early days of Hindustan Aircraft Limited, Air Marshal Philip Rajkumar (Retd), a 1965 war veteran, said: "The World War II started soon after the establishment of Hindustan Aircraft Limited, which became a huge maintenance base for all aircraft on Southeast Asia command by 1942-1943. The skies of Bangalore used to be full of American warplanes like the Mustang, Liberator, Spitfire and the Hurricanes and growing up in Bangalore at that time I have seen all these planes in the sky." "After India's Independence, the Hindustan Aircraft Limited produced the first Indian designed and built trainer aircraft called the Hindustan Trainer 2, which was the mainstay of the basic training stage of the Indian Air Force (IAF) for over 30 years. In fact, I learned to fly on the HT-2. Thereafter, in the early '50s, they started license production of the Vampire which was again the mainstay of the jet fighter fleet of the IAF for about 15 years. Then they started the licence production of the GNAT and around the same time a German team was brought here to design and build the first Indian fighters, the HF-24 Jet Fighter Marut. In the early 1960s, the chief designer of Hindustan Aircraft Limited, Dr VM

Ghatge, designed the Kiran trainer, which is still in service in the IAF,” he added. In 1963, Aeronautics India Limited (AIL) was incorporated as a company wholly owned by the Government of India, to undertake the license manufacturing of MiG-21 aircraft. In 1964, Hindustan Aircraft Limited and Aeronautics India Limited was amalgamated and was named as Hindustan Aeronautics Limited (HAL). “In recent times, it is a principal partner of the Aeronautical Development Agency (ADA) in the Light Combat Aircraft Tejas project. In recent times, new factories have been opened at Kasaragod, Tumkur and Goa to cope with the increasing demand for aeronautical products by the armed forces, the Coast Guard and some state governments,” Rajkumar said. Over the years, the HAL has designed and developed the Advanced Light Helicopter, Light Combat Helicopter, and Light Utility Helicopter. “So the HAL has remained the mainstay of the Indian armed forces for the past 80 years. I can make a straight statement that the fortunes of the Indian armed forces and the HAL are inextricably intertwined. One cannot exist without the other. India has been put on the world aeronautical map by the HAL. Having started in Bangalore, HAL has been an integral part of public sector enterprises. It was a forerunner of public sector enterprises in Bangalore and two-three generations of Bangaloreans have grown up with their fathers working in HAL. So, it is very much a part of the social and cultural life of Bangalore. The HA hockey and football teams have participated in state- and national-level tournaments. So, they’re part of the sporting field of Bangalore as well,” he added. In the late 1970s, HAL started manufacture of Jaguar aircraft and in 1982, it started the production of Swing-wing MiG-27M aircraft as a follow-on project for MiG-21 BIS. Recently, HAL supplied structures for GSLV Mk.III, Mars Mission and human crew module of the Indian Space Research Organisation (ISRO). The design and development of Basant agricultural aircraft was undertaken in the 1970s and design and development of Ajeet, an improved version of Gnat, was undertaken between 1972 and 1980. Speaking with indianexpress.com, HAL chairman and managing director R Madhavan said, “HAL grew up with the city of Bangalore. The growth of HAL is synonymous with the growth of this city. It has remained an integral part of the city.” Former executive director, engine division, HAL, V Balakrishnan, one who worked with HAL for 35 years, said: “The Vampire aircraft which was built here took part in the 1947 war. Ajeet participated in the 1965 Indo-Pak war, MiG-21s took part in the 1971 war and the MiG-27 took part in the Kargil operations in 1999. The Mirage was purchased by the IAF but it was overhauled by the HAL. Defence PSU BEML came up with the support of HAL. BEML, Bengaluru Complex which is known as Rail Coach Division, was established in 1948 under HAL and the BEML took over the same during 1964. HAL has a close partnership with Bharat Electronics Limited (BEL). Whatever modification IAF requires, BEL supplies the hardware and HAL integrates them. Recently, HAL has set up a dedicated facility for manufacture of cryogenic engines. Today, Suranjan Das Road (named after the test pilot Group Captain Suranjan Das) in Bangalore is known due to HAL and BEML facilities.”

Source: <https://indianexpress.com/>

DRDO Chairman Inaugurates Innovation, Science and Technology Foundation in Tirupati

The Defence Research and Development Organisation (DRDO) chairman Dr G Satheesh Reddy formally inaugurated the Innovation, science and technology foundation in Tirupati. During his inaugural address, the DRDO chairman invited the young brains to take up innovation on a large scale to take the nation forward. The Defence Research and Development Organisation (DRDO) chairman G Satheesh Reddy has invited the young brains to take up innovation on a large scale to take the nation forward. He spoke on the opportunities provided by the DRDO to the ‘ignited minds’ to come up with innovative products and services. Listing out the scores of schemes under which startups, innovation hubs and MSMEs can apply, he said the organisation had earmarked Rs 50 crore to support such novel ideas. “The response is encouraging, but we want to take the number to 500”, Dr Reddy added. He said the products developed locally through such innovation hubs would even be acquired by the armed forces. Dr Reddy asked the young brains to focus on cybersecurity-related aspects to come up with path-breaking products. He asked ISTF founder and president D Narayana Rao to act as a facilitator in creating a congenial innovation ecosystem and bringing institutions together. Hailing Tirupati as a unique destination having seven universities, national institutes like the IIT, IISER and IIIT (Sri City), research laboratories and installations like National Atmospheric Research Laboratory (NARL Gadanki) and SHAR Centre at Sriharikota, he saw a great scope to harness talent. The galaxy of academicians including Vice-Chancellors K Raja Reddy (SVU), Jamuna Duvvuru (SPMVV), Ram Rao Nagarajan (Mohan Babu University), directors KN Satyanarayana (IIT Tirupati), KN Ganesh (IISER Tirupati) and NARL director AK Patra acknowledged their role in taking ISTF forward. ISTF Secretary T Narayana Rao welcomed, while vicepresident V Narayana Reddy proposed a vote of thanks. Dr Satheesh Reddy also opened the ISTF website and launched its logo.

Source: <https://timesofindia.indiatimes.com/city/amaravati/drdo-chairman-inaugurates-innovationscience-and-technology-foundation-in-tirupati/articleshow/92623371.cms>

Indigenous Aircraft Carrier Vikrant Completion of 4th Phase of Sea Trials

The fourth phase of Sea Trials for IAC has been successfully completed on 10 Jul 22, during which integrated trials of majority of equipment and systems onboard including some of the Aviation Facilities Complex equipment were undertaken. The ship's delivery is being targeted in end Jul 22, followed by commissioning of the ship in Aug 22 to commemorate 'Azadi ka Amrit Mahotsav'. The Indigenous design and construction of Aircraft Carrier by Indian Navy and Cochin Shipyard Ltd is a shining example in the Nation's quest for 'AatmaNirbhar Bharat' and 'Make in India Initiative' with more than 76% indigenous content. This has led to growth in indigenous design and construction capabilities, besides development of large number of ancillary industries, with employment opportunities for over 2000 CSL personnel and about 12000 employees in ancillary industries. Maiden Sea Trials of IAC were successfully completed in Aug 21. This was followed by second and third phases of Sea Trials in Oct 21 and Jan 22 respectively. During these three phases of Sea Trials, endurance testing of propulsion machinery, electrical & electronic suites, deck machinery, lifesaving appliances, ship's Navigation and Communication systems was undertaken.

Source: <https://www.pib.gov.in/PressReleasePage.aspx?PRID=1840608>

Rajnath Singh to Launch 75 Newly-Developed AI-Enabled Defence Products

Defence Minister Rajnath Singh will launch the first artificial Intelligence in Defence' (AIDef) symposium and exhibition organised by the Department of Defence Production, Ministry of Defence on July 11 at Vigyan Bhawan in the national capital. The event will feature an exhibition to showcase the cutting-edge AI-enabled solutions developed by the services, research organisations, Industry and start-ups and innovators and the launch of AI products for the market. Briefing about the event, Defence Secretary said it is a big event where 75 newly-developed AI products/technologies, having applications in defence, will be launched, as part of the celebrations marking 75 years of Independence 'Azadi Ka Amrit Mahotsav' and to promote 'Aatmanirbharta' initiative in Defence. "Nature of modern warfare is changing and AI will play a significant role in warfare. These products are tested and soon to be deployed in the safety and security of the nation," Kumar said. He further said that the products are in the domains of automation/unmanned/robotics systems, cyber security, human behaviour analysis, intelligent monitoring system, logistics and supply chain management, speech/voice analysis and Command, Control, Communication, Computer and Intelligence, Surveillance and Reconnaissance (C4ISR) systems and operational data analytics "Besides the 75 products being launched, another 100 are in various stages of development," he added. In addition, two top defence exporters one each from the public and private sector will be felicitated during the event. During the press conference Additional Secretary Sanjay Jaju, responding to a question said that defence exports have crossed the highest ever figure of Rs 13,000 crore in Financial Year 2021-22, with 70 per cent contribution coming from the private sector and the remaining 30 per cent from the public sector. The event will also witness panel discussions on 'Deploying AI in Defence', 'GenNext AI solutions' and 'AI in Defence - Industry Perspective', with active participation from the Services, academia, students, research organisations and Industry. A 'GenNext AI' Solutions Competition has been organised to get bright innovative ideas from students on futuristic AI solutions. The top three ideas curated by AI experts will also be felicitated. An exhibition of AI products has also been organised. The event is likely to be attended by dignitaries from friendly foreign countries, senior officials from Ministry of Defence and other Ministries of Government of India, representatives from research institutes, academia and the Industry. It may be recalled that an AI task force on Defence was established in 2018 to provide a road map on promoting AI in defence.

Source: <https://timesofindia.indiatimes.com/india/rajnath-singh-to-launch-75-newly-developed-ai-enabled-defence-products/articleshow/92760054.cms>

INS Vikrant Successfully Completes Final Phase of Trials: How This Boosts Indian Navy's Strategic Influence in Countering China

Most of the equipment on board the India's Navy's flagship carrier were tested including critical Aviation Facilities Complex equipment which control the operations of MiG29K/KUB fighter jets from the aircraft carrier. India's first indigenous aircraft carrier INS Vikrant will be commissioned into the navy by end of August to commemorate 75 years of India's Independence. The aircraft carrier successfully completed the fourth and final phase of sea trials and is all but ready to set sail alongside its Russian made counterpart INS Vikramaditya. The Ministry of Defence announced, "The indigenous design and construction of the indigenous aircraft carrier [IAC-1] by the Indian Navy and Cochin Shipyard Ltd (CSL) is a shining example in the nation's quest for 'Aatmanirbhar Bharat' and 'Make in India Initiative,'

with more than 76 per cent indigenous content.” Most of the equipment on board the India’s Navy’s flagship carrier were tested including critical Aviation Facilities Complex equipment which control the operations of MiG29K/KUB fighter jets from the aircraft carrier. Reports said that the full integration and trials of the Aviation Facilities Complex will be carried out by the navy only after the warship’s commissioning on August 22nd. The making of INS Vikrant The 40,000 tonne indigenous aircraft carrier is 262 metres long, 62 metres wide and 59 metres high including the superstructure – five in number. It has 14 deck levels including the 5 in the superstructure and can accommodate a crew of 1,700, including women officers for whom specialised cabins have been constructed. INS Vikrant’s propulsion system was built with guidance from Italian shipbuilder Fincantieri. For normal operations, the Vikrant cruises at 18 knots (33 kmph), a speed at which it has an endurance of about 7,500 nautical miles (13,800 kilometres). INS Vikrant bears the name of India’s first aircraft carrier that was acquired from the United Kingdom in 1961 and it played a crucial role during the 1971 Bangladesh war. It was decommissioned in 1997. INS Vikrant is Indian down to the steel that was used to build the vessel. The Vikrant is built from SAIL’s DMR 249A and B grade steel that was developed and manufactured in 7 collaboration with the Defence research and Development Organisation (DRDO) and Steel Authority of India (SAIL). According to the Centre, the vessel is 76 per cent made from Indian material/equipment. INS Vikrant is composed of 23,000 tonnes of steel, 2,500 km of electrical cable, 150 kilometres of pipes, 2,000 valves. Finished products include anchor capstans, rigid hull boats, galley equipment, air conditioning and refrigeration plants, steering gear, over 150 pumps and motors, communication equipment and the ship’s combat network systems. The INS Vikrant will be carrying the Russian-made MiG-29K fighter jet, Kamov-31 early warning helicopters, the indigenously manufactured Advanced Light Helicopters and the MH60R multirole helicopter made by the American defence major Lockheed Martin, according to the Indian Navy. The Defence Ministry said that the building of INS Vikrant “has grown the country’s indigenous shipbuilding capabilities, and developed a large number of ancillary industries.” Why was INS Vikrant developed? INS Vikrant will be the Indian navy’s second aircraft carrier. It will give the Indian Navy additional firepower and a strong leverage in the Indian Ocean region over which India is seeking to establish itself as a security provider and a challenger to China which has already inducted two such vessels into its fleet. The communist nation recently launched a third one although it will be years before it is operational. This new carrier will be China’s first indigenous aircraft carrier. Aircraft carriers are the most valuable and therefore vulnerable sea-based assets. Few countries in the world have the capability to design and manufacture aircraft carriers. As India enters this club, it will now have to take a tough call on whether or not to build another indigenous aircraft carrier – the IAC-2. Former Chief of Defence Staff General Bipin Rawat had questioned the need for another IAC after the first one overshot the deadline and budget. However, former navy chief, Admiral Karambir Singh, had stressed the need for IAC-2. “As a navy, we are absolutely clear about the need for a third carrier. Air operations are absolutely integral to naval operations, so air power at sea is absolutely required,” Singh said on the eve of Navy Day last December. “Navies are all about reach and sustenance. For an aspirational country like India, which wants to become a \$5- trillion economy, you have to be able to (project power) outwards. We cannot be a navy that is tethered to the shore,” Karambir Singh said. The political leadership is yet to decide on the need of IAC-2.

Source: <https://www.timesnownews.com/exclusive/ins-vikrant-successfully-completes-final-phase-oftrials-how-this-boosts-indian-navys-strategic-influence-in-counterering-china-article-92830596>

TECHNOLOGY

HAL and Safran to Develop new Helicopter Engines in Joint Venture

Hindustan Aeronautics Limited (HAL) and Safran Helicopter Engines have signed an agreement to create a new joint venture intended to develop helicopter engines. Through a Memorandum of Understanding (MoU), signed by Mr. R. Madhavan, CMD, HAL and Mr. Franck Saudo, CEO Safran Helicopter Engines in the presence of Mr. Olivier Andriès, Safran CEO. The both partners will extend their long-lasting partnership by establishing a new aero-engine company in India. It will be dedicated to the development, production, sales and support of helicopter engines and one of its main objectives will be to meet the requirements of HAL and Ministry of Defence’s future helicopters, including the 13-ton IMRH (Indian Multi-Role Helicopter). This MoU demonstrates once again the commitment of both Safran Helicopter Engines and HAL to the Indian Government’s vision of “Aatmanirbhar Bharat” or achieving self-reliance – particularly in defence technologies. Mr. Madhavan said: “Safran Helicopter Engines has been our valued partner for several decades. We now look forward to utilize this opportunity to leverage HAL’s experience in manufacturing of more than 15 types of aircraft and helicopter engines to jointly co-develop and manufacture engine with immediate focus on IMRH and its naval variant the Deck Based Multi Role Helicopter (DBMRH). This partnership will involve and utilize the Indian

Defence manufacturing ecosystem within India". Mr. Franck Saudo said: "The creation of this new joint venture marks a turning point in our relationship with HAL and the Indian MoD with the development and production of a new generation of helicopter engine. We are proud to further expand our structuring partnership with HAL, which began more than 50 years ago, and which was recently illustrated with the development and production of the Shakti engine and the inauguration of our joint venture Helicopter Engines MRO Pvt Limited (HE-MRO). With a fleet of over 1,000 engines, India's Armed Forces are one of the largest operators of Safran-designed helicopter engines". HAL and Safran Helicopter Engines have already multiple partnerships, including the Shakti engine, which powers HAL-produced helicopters, including the Dhruv, Rudra and the Light Combat Helicopter (LCH). The Ardiden 1U variant also powers the new Light Utility Helicopter (LUH). More than 500 Shakti engines have already been produced Through HE-MRO joint venture in Goa, HAL and Safran Helicopter Engines will also provide MRO (Maintenance, Repair and Overhaul) services for TM333 and Shakti engines in service with Indian Armed Forces. It will be operational by the end of 2023.



Source: <https://hal-india.co.in/>

PM Modi launched India's 1st passenger drone, check its name, range, speed, benefits

P M Modi launched India's 1st passenger drone: In a historic feat, India's first drone that can carry human payload of upto 130 kgs was unveiled in the presence of Prime Minister Narendra Modi during Naval Innovation and Indigenisation Organisation (NIIO) seminar 'Swavlamban' in New Delhi.

Important Points related to India's 1st passenger drone

- #1)** The name of India's 1st passenger drone is 'Varuna'.
- #2)** It is country's first human carrying platform.
- #3)** It is pilot-less drone and has been indigenous developed by the Indian startup Sagar Defence Engineering.
- #4)** The drone has the capacity to carry one person inside.
- #5)** During the demonstration the pilot-less drone flew around two meters above and then moved forwards before coming back to land.
- #6)** According to Sagar Defence Founder and CEO Nikunj Parashar, this is India's first electronic human carrying platform and the drone has been specially made for the Indian Navy, where the force can initially use it in transferring materials from one ship to another in future.
- #7)** The drone can also be used for medical emergencies. A patient can also be taken to the hospital.
- #8)** In 'Varuna' drone, there are four auto-pilot modes which enable it to continue flying even if some fans fail to function.
- #9)** Presently, the drone is undergoing the land-based trial and will hit the sea trials in the next three months.
- #10)** The drone has the capability to fly till the range of 25km while carrying a payload of 130 kilograms. Further, it can endure between 25- 33 minutes.
- #11)** Interestingly, Varuna has been developed in two parts – one being the technology, which helps the drone to land and take off from moving warships and the second being the platform itself.

#12) Notably, the landing and taking off technology has been developed in tandem with Indian Navy DSR. India's first human carrying drone is presently being developed along with NTDAC (Naval Technology Development acceleration cell).

#13) 30 Varuna drones which can land and take off from warships, have already been delivered to the Indian Navy, and it is also the first time ever that the Indian Navy is inducting drones on warships.

#14) The drone is capable of carrying out autonomous take-off and landing even when the ships are moving.

#15) The startup – Sagar Defence, has already been awarded a contract for the development of an autonomous and intelligent underwater swarm of drones under Innovations for Defence Excellence (iDEX) by Defence Innovation Organisation (DIO) along with the development support from Mazagon Dock Limited (MD), who is the funding, testing as well as manufacturing partner.

Source: <https://www.helloscholar.in/>

Army Aviation Augments Combat Power While Ageing Cheetah, Chetaks Await Replacement

The Army Aviation Corps is in the process of a major augmentation of its fire power with the induction of the indigenous Light Combat Helicopter (LCH) underway, and Apache attack helicopters from 2024 onwards. However, its fleet of ageing Cheetah and Chetak helicopters, which are a lifeline for high altitude areas, are in dire need of replacement. Of the 190 Cheetahs and Chetaks in service, around 134 helicopters or over 70% of them are over 30 years old. "While combat potential has increased manifold and is on an upswing, reconnaissance and surveillance capabilities are going to take a hit unless induction of Ka-226T and indigenous Light Utility Helicopter (LUH) take place simultaneously to replace the ageing fleet," a defence official said on condition of anonymity. The LUH, designed and developed by Hindustan Aeronautics Limited (HAL), has come up well, but it will take time for sufficient numbers to come in, the official stated. The Air Force is also scheduled to raise its first LCH squadron shortly. However, the deal with Russia for 200 Ka-226T utility helicopters has been stuck for several years over indigenisation issues and is now on the verge of cancellation with the 14 availability of the LUH and the global situation compounded by the war in Ukraine, two defence officials independently confirmed. The Indian Army and Indian Air Force (IAF) together have a requirement of over 400 helicopters of this class. LCH squadron On June 1, 2022, the Army raised its first LCH squadron at Bengaluru. "It will move to Eastern Command on completion next year," the official stated adding that, in all, seven LCH units are planned, each having 10 helicopters for combat roles in the mountains. The Army has three Aviation Brigades at Leh, Missamari and Jodhpur. It operates around 145 indigenous Advanced Light Helicopters (ALH), 75 of which are the Rudra weaponised variants. Another 25 ALH MkIII are on order and will be inducted within two years, another official said. The Cabinet Committee had sanctioned the procurement of 39 AH-64 Apache attack helicopters from the U.S. Following this, the IAF procured 22 Apaches under a deal signed in September 2015. The government has decided that any further Apache procurements would go to the Army. In line with this, India signed a deal for six more Apaches to cost around \$800 million in February 2020. "There is a delay in the deliveries of these due to the COVID pandemic. They are now scheduled to begin deliveries in early 2024," the first official said. In August 2021, Army Aviation got control of the Army's Unmanned Aerial Vehicles (UAV), which were earlier under the Artillery. The Army has over 30 Herons UAVs procured from Israel and a major upgrade plan for weaponisation and facilitation of satellite communication for them at an estimated cost of over Rs. 6000 crore has been delayed, officials said. This is part of a comprehensive upgrade of all Israeli drones with the three Services that is in the works and estimated to cost Rs. 21,000 crore, officials stated. In addition, with the deal for armed Predator drones from the U.S. stuck, the Army is looking at procuring long range Hermes 900 UAVs from Israel, which are manufactured in India by Adani Group. Ageing fleet Army Aviation currently operates around 190 Cheetah, Chetak and Cheetal helicopters, with five of them, the oldest, being over 50 years old. A bulk of the fleet, close to 130 of the 190, are between 30 to 50 years old, an official in the know said. This fleet is the lifeline in transporting supplies and for evacuations in high altitude areas, including the Siachen glacier. In addition to the Army, the Navy and IAF too operate these helicopters. For instance, the IAF has around 120 Cheetah and Chetak helicopters, and around 18 of the more recent Cheetals. As reported by The Hindu earlier, the total technical life of these helicopters will start ending from 2023 onwards, which will only further exacerbate the existing deficiencies.

Source: <https://www.thehindu.com/news/national/army-aviation-augments-combat-power-while-ageingcheetah-chetaks-await-replacement/article65623822.ece>

Tata Advanced Systems Successfully Delivered Indigenously Developed Quick Reaction Fighting Vehicle to Indian Army

Tata Advanced Systems Limited (TASL) successfully delivered the indigenously developed Quick Reaction Fighting Vehicle-Medium (QRFV) to the Indian Army. "TASL has successfully delivered the QRFV to the Indian Army," the TASL tweeted. It further said that the induction of this vehicle will enhance the operational capabilities of the Indian Army in future conflicts. "The induction of this vehicle developed by TASL would greatly enhance the operational capabilities of the Indian Army in future conflicts," it added. Earlier in the day, Minister of Defence for Defence Ajay Bhatt said that the BJP-led government in Centre has taken several policy initiatives in the past few years and brought in reforms to encourage indigenous design, development and manufacture of defence equipment in the country, thereby expanding the production of indigenous defence equipment. In a written reply to Rajya Sabha, the MoS said that the initiatives taken by the Centre for to encourage the production of indigenous defence equipment have resulted in cutting the the expenditure on defence procurement from foreign sources from 46 percent of the overall expenditure to 36 percent in the last four years — 2018-19 to 2021-22. In April, Chief of Army Staff General MM Naravane had inducted the first set of QRFV. As per a defence release, the Army Chief had inducted the QRFV, Infantry Protected Mobility Vehicle (IPMV), Ultra Long Range Observation System developed by TASL and Monocoque Hull Multi-Role Mine Protected Armoured Vehicle developed by Bharat Forge.

Source: <https://www.timesnownews.com/>

State-of-the-Art Hypersonic Vehicles by 2024-25 in India: Defence Ministry

High-end hypersonic [glide] vehicles that can cross Mach 6 and 8 are expected to be developed by 2024 or 2025, Kailash Kumar Pathak, Director of Futuristic Technology Management under the Defence Ministry, said here. Speaking on the sidelines of the Coimbatore Defence Conclave 2022 at Kumaraguru Institutions, Mr. Pathak said that various programmes are coming up for dealing with extreme cold conditions for jawans, including developing new jackets for them. Multiple indigenous agencies have come together with academia for development of these. The conclave was held to mark the seventh death anniversary of former President A.P.J Abdul Kalam. A plaque for the new Coimbatore regional centre of the Aerospace Industry Development Association of Tamil Nadu (AIDAT) was unveiled by S. Christopher, AIDAT Chairman and former DRDO Head. B. Krishnamoorthy, Project Manager of Tamil Nadu Industrial Development Corporation (TIDCO), said an aero-engine components manufacturing unit was coming up at Hosur. The State plans to set up a semiconductor fabrication plant in association with IGSS Ventures, a Singapore-based technology investment holding company. "The space sector economy forecast is targeted at \$ 700 million by 2030," he said. "The Defence Ministry envisions manufacturing Rs. 1,75,000 crore-worth items and Rs. 25,000 crore export under the Aatma Nirbhar Bharat [Abhiyan]. Tamil Nadu, which houses the largest industries, can contribute to a major chunk of this and Coimbatore can help further this goal," he said. "We have identified various theme-based parks to cater to the needs of Indian Space Research Organisation facilities like manufacturing launch vehicles and for fabrication," he added. "Roughly only 50% of the total trained pilots required for the country is sent from Tamil Nadu. To develop a new aviation training facility, over four foreign firms have inked MoUs with the State. Tidco is in the process of identifying and developing airstrips for this facility. We are in talks with various foreign agencies and Indian Offset Partners (IOP) under the Defence sector so that Tamil Nadu can hit the projected \$1 trillion economy," Mr. Krishnamoorthy said.

Source: <https://www.thehindu.com/news/cities/Coimbatore/state-of-the-art-hypersonic-vehicles-by-2024-25-in-india-defence-ministry/article65689842.ece>

BUSINESS

HAL better placed to join hands with any foreign aerospace major for MRFA project: Madhavan

Hindustan Aeronautics Limited (HAL) is better placed to partner with any foreign military plane maker to produce combat jets in India under the ambitious Multi-Role Fighter Aircraft (MRFA) programme, Chairman and Managing Director of the state-run aerospace behemoth, R Madhavan, said. The government is moving forward to procure 114 jets for the Indian Air Force (IAF) at a whopping cost of \$20 billion, billed as one of the world's biggest military acquisition programmes in recent years. It was initially indicated that the aircraft will be procured under the strategic partnership (SP) model that mandates a foreign manufacturer to join hands with an Indian company to manufacture

major military platforms. The top HAL executive also said the government should decide on the aircraft for the IAF under the MRFA project and it should be left to the manufacturer of the plane to decide on its Indian partner. "With our infrastructure and experience, HAL is much better placed to join hands with a foreign entity to produce the aircraft. Definitely, we are looking at being the Indian entity for the project," Madhavan told PTI in an interview. Asked whether the mega project should be implemented under the strategic partnership model, the HAL chief only said it should be left to the businesses to find their own solution. "Once a decision is taken on the aircraft, let the manufacturer decide on its Indian partner and let them quote (the price) together. It is a possibility," Madhavan said. "If the original equipment maker finds HAL to be comfortable to join hands with, let it come. If it finds somebody else, let them go there," he added. In April 2019, the IAF issued an RFI (Request for Information), or an initial tender, to acquire 114 jets. The top contenders for the deal include Lockheed Martin's F-21, Boeing's F/A-18, Dassault Aviation's Rafale, the Eurofighter Typhoon, Russian aircraft MiG 35 and Saab's Gripen. Last week, Chief of Air Staff, Air Chief Marshal VR Chaudhari told PTI that the winner of the mega project will have to ensure the transfer of technology as it would be implemented under the framework of the "Make in India" initiative. Madhavan also cited the groundwork between HAL and Dassault Aviation around a decade ago for the production of Rafale jets in India as part of negotiations for the procurement of a fleet of 126 Medium Multi-Role Combat Aircraft (MMRCA). In the original proposal, 18 planes were to be manufactured in France and 108 in India in collaboration with HAL. In 2016, the NDA government signed a Euro 7.87-billion (Rs 59,000-crore) deal with France to procure 36 Rafale jets. "We did a lot of leg work then. But it is not that we should look at only Dassault Aviation for the MRFA project. If they select Boeing or Lockheed or any other manufacturer, we are ready to join hands with any aerospace major," Madhavan said. HAL is the producer of the Tejas aircraft, which is a highly agile multi-role supersonic fighter jet capable of operating in high-threat air environments. In February last year, the defence ministry sealed a Rs 48,000-crore deal with HAL for the procurement of 83 Tejas fighter aircraft for the IAF. The much-talked-about strategic partnership model allows domestic defence manufacturers to join hands with leading foreign defence majors to produce high-end military platforms. The policy is aimed at reducing import dependence. Initially, the strategic partners will be selected in four segments — fighter aircraft, helicopters, submarines and armoured fighting vehicles or main battle tanks.

Source: <https://www.deccanherald.com/>

ISRO earns \$279 million in forex through satellite launches

The Indian Space Research Organisation (ISRO), through its commercial arms, has earned 279 million dollars in foreign exchange by launching satellites for global clients, Union Minister Jitendra Singh told the Lok Sabha. In a written reply to a question, Singh said ISRO in association with its commercial arms has successfully launched 345 foreign satellites from 34 countries on-board Polar Satellite Launch Vehicle (PSLV). "Total foreign exchange revenue earned through launching of foreign satellites amounts to USD 56 million (one million=10 lakhs) and 220 million Euros approximately," Singh said, without mentioning any time-frame for such launches. As per current exchange rates, 220 million euros are equivalent to 223 million dollars. The latest PSLV mission was on June 30 when ISRO's warhorse launch vehicle placed three Singaporean satellites into orbit. PSLV-C53 mission by ISRO, successfully launched three Singapore customer satellites namely DS-EO, NeuSAR and SCOOB-1. The PSLV-C53 was the second dedicated commercial mission for NewSpace India Limited (NSIL), a Central Public Sector Enterprise under administrative control of the Department of Space (DOS), Singh said.

Source: <https://www.deccanherald.com/>

Drone Startup Garuda Signs MoU with TIDCO for a Defence-Focused Facility in TN

Drone startup Garuda Aerospace has signed an MOU with the Tamil Nadu Industrial Development Corporation Limited (TIDCO) to jointly develop a facility focused on the defence sector. "We have been receiving a lot of interest from the Army, Airforce, CRPF, CISF, BSF and we have started designing drones keeping in mind our national security threats as we firmly believe that drones equipped with diverse payloads can support our forces in the borders," said Agnishwar Jayaprakash, founder-CEO, Garuda Aerospace. "This partnership with TIDCO involves joint development of a drone manufacturing facility focused on the defence sector and aims to create over 5,000 jobs for youth in Tamil Nadu alone," said a TIDCO official. TIDCO is the nodal agency for the Tamil Nadu defence corridor. "The future of warfare is drones and Garuda Aerospace is attracting global technology partners post our recent funding round to speed up our defence aspirations," added Agnishwar Jayaprakash. Recently, Garuda Aerospace commenced its \$30 million Series A Round

at \$250 million valuation and former Indian cricket team captain MS Dhoni invested into the company while also becoming Garuda's brand ambassador.

Source: <https://timesofindia.indiatimes.com/business/india-business/drone-startup-garuda-signs-mou-with-tidco-for-a-defence-focussed-facility-in-tn/articleshow/92681288.cms>

AWARD

APJ Award Presented to DRDO Scientist Tessy Thomas

Governor Arif Mohammed Khan presented the APJ Award instituted by Noorul Islam University to Tessy Thomas, scientist and Director General, Aeronautical Systems, Defence Research and Development Organisation (DRDO). The award, comprising a cash prize of ₹ 1,00,000 and a citation, was given away at a function held at the NIMS Medicity auditorium. Dr. Tessy Thomas, also known as Missile Woman, was selected for the award for her role in developing indigenous missile systems. The jury was headed by Dr. A.P. Majeed Khan, chancellor of the university. Dr. Thomas interacted with the students of the university and spoke about the strides taken by the country in space and allied sectors and the road ahead. NIMS Medicity managing director M.S. Faisal Khan, Noorul Islam University Pro-Chancellor Dr. Perumal Swami and Vice Chancellor Dr. Kumaraguru were among those present. The university also felicitated those who have put in exemplary service in different sectors.

Source: <https://www.thehindu.com/news/national/kerala/apj-award-presented-to-drdo-scientist-tessythomas/article65658626.ece>

EVENT

Bangalore based Aero innovation and Skill Centre (AISC) raised Half Million USD (INR 4 Crores) worth support as in kind grants at its inaugural ceremony

Aero Innovation and Skill Centre (AISC):

(Centre for Innovation, Incubation, Research and Advanced Skills)

Program: Inaugural Ceremony of Aero Innovation and Skill Centre along with seminar

Date: 16th July 2022

Venue: Skill Development Unit, HMA Old campus, Suranjan das Road, Near HAL Hospital, Bangalore-560075

Dr. G Sateesh Reddy, Chairman, DRDO and Secretary Defence R&D inaugurated Aero Innovation and Skill Centre and addressed the gathering. The industries, academicians and start-ups attended. Dr. Sateesh Reddy explained about various research and start up programs supported by DRDO and called the youngsters to take leverage of the government initiatives and support and mentorship of AISC to innovate and indigenize defence products for Atmanirbhar Bharat Mission.

Dr. G Sateesh Reddy inaugurated the centre in the presence of august gathering of:

Shri A S Kiran Kumar, Former Chairman, ISRO and President AeSI

Dr C G Krishnadas Nair, Former Chairman, HAL

Dr. Tessy Thomas, DG, AERO, DRDO

Our Special Guest, Shri R. Madhavan, CMD, HAL

Special Guest, Shri Vishwanath Rao, MD, Altair India

Dr. U Chandrasekhar, Director, Wipro 3D and Chairman, AISC

During this event an MOU has been signed between US Multinational Company ALTAIR Inc and AISC. Under this MOU AISC will support ALTAIR's prestigious Start-up challenge programs 2022 edition in UAV segment.

Shri Vishwanath Rao, Managing Director, Altair India mentioned that ALTAIR will support AISC with high end technology, resources and manpower for AISC programs worth Half Million USD (INR 4 Crores) as in kind grants.

Further, Shri Vishwanath Rao said, the initiatives taken by the Aeronautical Society of India and the Altair Start-up Challenge are the steppingstones for creating a humming ecosystem for Aerospace & Defence innovation through start-ups.

About Aero Innovation and Skill Centre (AISC)

Aero Innovation and Skill Centre (AISC) is a special interest group of The Aeronautical Society of India, Bengaluru Branch which is an advanced Centre for mentoring Innovation, Incubation, Research and Advanced Skills, encouraging start-ups and to support in design prototyping of various ideas related to Aviation and Aerospace Technologies. AISC will facilitate aspiring entrepreneurs and start-ups to come forward to do R&D, build products/solutions and put forward for acceptance by defence agencies by creating Centre of excellences for Design, Prototype development and testing at various academic institutions. Our aim is to catalyse the whole defence start-up ecosystem through the resources and contacts of AeSI.

What is Altair India -Start-up Challenge?

Altair in collaboration with Start-up India, a Government of India initiative, built a strong and inclusive ecosystem for innovation and entrepreneurship in India, known as Altair -Start-up Challenge. It gives organizations access to high-end technology.



Dr. Satheesh Reddy, Chairman, DRDO

**Inaugurating AISC in the presence of Shri A S Kiran Kumar
President AeSI and Mr Arup Chatterji Chairman BB AeSI**



Dr Satheesh Reddy Chairman, DRDO President Elect AeSI

Intreacting with students and start up facilitators

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