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DRDO develops Advanced Chaff Technology for Indian Air Force

Defence Research & Development Organisation (DRDO) has developed an Advanced Chaff Technology to safeguard fighter aircraft of the Indian Air Force (IAF) against hostile radar threats. Defence Laboratory Jodhpur, a DRDO laboratory developed the advanced Chaff material and chaff cartridge-118/I in collaboration with High Energy Materials Research Laboratory (HEMRL), a Pune based laboratory of DRDO, meeting qualitative requirements of IAF. The Indian Air Force has started the process of induction of this technology after completion of successful user trials. In today's electronic warfare, survivability of fighter aircraft is of prime concern because of advancement in modern radar threats. To ensure survivability of aircraft, Counter Measure Dispensing System (CMDS) is used which provides passive jamming against Infra-Red and radar threats. Chaff is a critical defence technology used to protect fighter aircraft from hostile radar threats. The importance of this technology lies in the fact that very less quantity of chaff material deployed in the air acts as decoy to deflect enemy's missiles for ensuring safety of the fighter aircraft. The technology has been given to the industry for production in large quantities to meet the annual rolling requirement of the Indian Air Force. Raksha Mantri Shri Rajnath Singh has lauded DRDO, IAF and the industry for indigenous development of this critical technology, terming it as one more step of DRDO towards 'AatmaNirbhar Bharat' in strategic defence technologies. Secretary Department of Defence R&D and Chairman DRDO Dr G Satheesh Reddy congratulated the teams associated with the successful development of this advanced technology that will further strengthen the Indian Air Force.



Source: <https://pib.gov.in/>

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CURRENT AFFAIRS

HMA Offers a Unique PGDM Programme for 2021-22

HAL Management Academy (HMA), Bengaluru, is offering a unique and most featured two-year residential Post Graduate Diploma in Management (PGDM) programme for engineering, science graduates etc. This programme is the perfect launch pad for a top quality management education from an institute which is more than 50 years in the field of management. The programme features immersive learning experience, well-crafted case studies, provides learners with an in-depth understanding of the processes, learning from industry visits and experts. Applications are invited for this PGDM programme in Aviation Management and Production Management for the Academic year 2021-22 and the last date for submission of application is August 20, 2021. More details can be obtained from HAL Management Academy (Mob./WhatsApp: +91 99866 41481) or by visiting the website www.hal-india.co.in

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

HAL's 'Made in India' Civil Aircraft Achieves Major Milestone, Carries out Ground Run and LSTT

HAL successfully carried out the Ground Run and Low Speed Taxi Trials (LSTT) of the Hindustan-228 (VT-KNR) aircraft on August 15, 2021 for DGCA 'Type Certification'. The event was part of 75th Anniversary of India's Independence Day celebrations at HAL's Kanpur facility. "This is a major milestone for the first fixed wing Made-in-India civil aircraft in India. It is a step forward towards strengthening regional air connectivity", says Mr Sajal Prakash, CEO of HAL's Accessories Complex. Mr Indranil Chakraborty, Director, DGCA said the type certification will also enable HAL to get the international certification for the aircraft. The aircraft complies with the latest FAR 23 certification requirements. HAL's Transport Aircraft Division, Kanpur has been in the business of transport and trainer aircraft for defence customers. The Division has ventured into the manufacturing of Hindustan-228 aircraft to support the Regional Connectivity Scheme (UDAN) of the Government of India. This aircraft could be utilized successfully by civil operators and State Governments for their intra and inter-state connectivity with seamless support towards training, maintenance and logistics. The Hindustan-228 is a 19-seat multirole utility aircraft built for various applications such as VIP transport, passenger transport, air ambulance, flight inspection roles, cloud seeding, and recreational activities like Para jumping, aerial surveillance, photography and cargo applications.

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

ISRO's Chandrayaan-2 instrument detects hydroxyl, water molecules on the Moon

An instrument on the Indian Space Research Organisation's Chandrayaan-2 has detected the presence of hydroxyl (OH) and water molecules (H₂O) on the Moon's surface, according to a new paper published in Current Science. The data was collected by the Imaging infrared spectrometer (IIRS), developed by Ahmedabad-based Space Applications Centre (SAC) of ISRO from the electromagnetic spectrum obtained from the lunar surface, further used to detect mineral composition. Chandrayaan-2, launched in 2019, suffered a tragic crash in which the lander and rover were completely damaged, however, the orbiter remains active and is now used by scientists to make path-breaking discoveries from the lunar surface. The instrument can operate between the wavelength of 0.8 to 5 micrometre, which enhances the ability to precisely distinguish between OH (hydroxyl) and H₂O (water) molecules. Chandrayaan-1 of 2008 too had similar equipment called Moon Mineralogy Mapper or M3. However, its wavelength was limited between 0.4 to 3 micrometre. Scientists then had questioned the accuracy of the data received from the instrument, saying it is harder to distinguish OH from H₂O in its case. The paper, authored by scientists from IIRS in Dehradun, SAC in Ahmedabad, UR Rao Satellite Centre and ISRO headquarters in Bengaluru, reveals that the formation of hydroxyl or water molecules occurs due to a process called space weathering, which is when the solar winds blow over the lunar

surface. Another reason could be small meteorites interacting with the surface that could result in chemical changes. The find is also crucial for future planetary exploration for resource utilisation, the paper notes. “The proper interpretation of hydration feature through spectral analysis is significant as it provides important inputs regarding geology and geophysics of the mantle (of the moon) in terms of their mineralogy, chemical composition, rheology and solar-wind interaction.”

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

ISRO conducts hot test of Gaganyaan Service Module Propulsion System

ISRO said it successfully conducted the first hot test of the System Demonstration Model (SDM) of the Gaganyaan Service Module Propulsion System for a duration of 450 seconds at the test facility of Propulsion Complex (IPRC), Mahendragiri, Tamil Nadu. The system performance met the test objectives and there was a close match with the pre-test predictions, the Bengaluru-headquartered space agency said in a statement. Further, a series of hot tests are planned to simulate various mission conditions as well as off-nominal conditions, it said. The Service Module (SM) is part of the Gaganyaan Orbital module and is located below the crew module and remains connected to it until re-entry, ISRO (Indian Space Research Organisation) explained. The SM Propulsion System consists of a unified bipropellant system consisting of five numbers of 440 N thrust engines and 16 numbers of 100 N Reaction Control system (RCS) thrusters with MON-3 and MMH as Oxidizer and Fuel respectively. “The SDM, consisting of five numbers of 440 N engines and eight numbers of 100 N thrusters, was realised to qualify the propulsion system performance in ground. A new test facility is established at IPRC, Mahendragiri for testing the SDM”, the statement added.

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

India starts trial of indigenous aircraft carrier amid China's bid to expand presence in Indian Ocean

India has launched the sea-trial of its first indigenous aircraft carrier amid growing concerns in New Delhi over Chinese People's Liberation Army Navy's bid to expand its presence in the Indian Ocean. The aircraft carrier is expected to be commissioned into the Indian Navy as the INS Vikrant in the first half of 2022. It is going to be the second aircraft carrier of the Indian Navy on active duty after the INS Vikramaditya, which India had purchased from Russia and which had entered into Indian Navy service in 2013. Prime Minister Narendra Modi called it a “wonderful example” of the Make-in-India initiative launched by his government. He tweeted to congratulate the Indian Navy and the Cochin Shipyard Limited, which built the ship, for the “historic milestone”. The Cochin Shipyard Limited had started works on the aircraft carrier in 2009 with the keel laid by A K Antony, the defence minister of the then Congress-led Government led by Modi's predecessor Manmohan Singh. “Proud & (and) historic day for India as the reincarnated #Vikrant sails for her maiden sea trials today, in the 50th year of her illustrious predecessor's key role in victory in the #1971war,” the Indian Navy posted on Twitter. It referred to the key role the earlier incarnation of the INS Vikrant played in 1971 India-Pakistan war. Once inducted into the Indian Navy, the new aircraft carrier will be named after the original INS Vikrant, which was decommissioned in January 1997. The new incarnation of the INS Vikrant set sail for its maiden sea trial, just two days after the Indian Navy announced that it would soon send a task force of its eastern fleet to the South China Sea to take part in bilateral drills with the warships of Vietnam, Australia, Philippines, Malaysia and Indonesia – a move, which might rile up China. The four Indian Navy ships would also sail to the Western Pacific Ocean for the multilateral Malabar 21 exercise with India's partners in the Quad – Australia, Japan and the United States. India's move to project its power in the Indo-Pacific region comes amid China's growing belligerence in the South China Sea, East China Sea and Taiwan Strait and its PLA Navy's forays in the Indian Ocean. The Indian Navy noted that the aircraft carrier was the largest and the most complex warship ever designed and built in India. It is the largest warship built in the country having a displacement of about 40,000 tonnes, with approximately 2000 kilometres of cabling, 120 kilometres of piping and the 2300 compartments available onboard. The mammoth structure is built with 21,500 tonnes of special grade steel, which was developed indigenously and used in any Indian Navy ship for the first time. The aircraft carrier – 262

meter long, 62 meter at the widest part and height of 59 meter including the superstructure – is a mini floating city, with a flight deck area covering the size of two football fields. It has a top speed of around 28 knots and cruising speed of 18 knots with an endurance of about 7,500 nautical miles. There are 14 decks in all, including five in the superstructure. The ship has over 2,300 compartments, designed for a crew of around 1700 people, including specialised cabins to accommodate women officers.

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

Vice Admiral SN Ghormade, AVSM, NM assumes charge as Vice Chief of the Naval Staff

Vice Admiral SN Ghormade, AVSM, NM has assumed charge as the Vice Chief of Naval Staff from Vice Admiral G Ashok Kumar, PVSM, AVSM, VSM, ADC at a formal ceremony held this morning at South Block, New Delhi. Vice Admiral G Ashok Kumar is retiring today after glorious service of 39 years. Vice Admiral SN Ghormade is an alumni of the National Defence Academy (NDA), Khadakwasla, Naval Staff College at the United States Naval War College, Newport, Rhode Island, and the Naval War College, Mumbai. The Flag Officer was commissioned in the Indian Navy on 01 Jan 1984 and is a Navigation and Direction specialist. The Flag Officer has had extensive operational tenures onboard frontline warships of the Indian Navy. During his career spanning over 37 years, he has been through a myriad of operational and staff appointments. His important operational appointments include Commands of Guided Missile Frigate INS Brahmaputra, Submarine Rescue Vessel INS Nireekshak, and Minesweeper INS Alleppey, and Second-in-Command of Guided Missile Frigate INS Ganga. INS Nireekshak was awarded the Unit Citation for the first time during his command. The Flag Officer was holding the tri-service appointment of Deputy Chief (Operations & Training) at Headquarters Integrated Defence Staff prior taking over the present appointment as Vice Chief of the Naval Staff at IHQ MoD(N).

Source: <https://pib.gov.in/PressReleasePage.aspx?PRID=1741001>

Modernisation of Airforce

Modernisation of Airforce is being undertaken following a multi-pronged approach involving indigenization, upgradation and integration. There has been induction of new weapon systems/platforms, advanced aircraft, air defence systems and modern technology. Many weapon systems and platforms have already been inducted and operationalised. This carefully planned approach has transformed IAF into a modern network centric force capable of sustained multirole operations along entire spectrum of conflict. This information was given by Raksha Rajya Mantri Shri Ajay Bhatt in a written reply to Dr Sasmit Patra in Rajya Sabha today.

Source: <https://pib.gov.in/PressReleasePage.aspx?PRID=1741471>

Raksha Mantri Shri Rajnath Singh to commission indigenously built Indian Coast Guard Ship Vighraha

Indian Coast Guard (ICG) Ship Vighraha, seventh in the series of Offshore Patrol Vessels (OPVs), will be commissioned by Raksha Mantri Shri Rajnath Singh in Chennai on August 28, 2021. The 98-meter OPV, with a complement of 11 officers and 110 sailors, has been designed and built indigenously by Larsen & Toubro Ship Building Limited. It is fitted with advanced technology radars, navigation & communication equipment, sensors and machinery capable of operating in tropical sea conditions. The vessel is armed with a 40/60 Bofors gun and fitted with two 12.7 mm Stabilised Remote Control Gun with fire control system. The ship is also designed to carry one twin-engine Helicopter and four high speed boats for boarding operation, search & rescue, law enforcement and maritime patrol. The ship is also capable of carrying pollution response equipment to contain oil spill at sea. The ship displaces approximately 2,200 tons and is propelled by two 9100 KW diesel engines to attain a maximum speed of 26 nautical miles per hour with endurance of 5000 nm at economical speed. The ICG, with this ship joining the fleet, will have 157 ships and 66 aircraft in its inventory. The commissioning ceremony will also be attended by Chief Minister of Tamil Nadu Shri M K Stalin, Chief of

Army Staff General M M Naravane, Director General Indian Coast Guard Shri K Natarajan and other senior dignitaries of the central & state governments.

Source: <https://pib.gov.in/>

U Raja Babu appointed RCI director

Ummalaneni Raja Babu, Outstanding Scientist and Programme Director, AD has been appointed Director, Research Centre Imarat (RCI), a premier avionics laboratory of Dr APJ Abdul Kalam Missile Complex, DRDO, in Hyderabad. U Raja Babu, is known for his significant contributions as Programme Director, AD at RCI. He provided necessary thrust to the design, development and successful demonstration of Ballistic Missile Defence system capabilities. Under his leadership, Programme AD successfully demonstrated "Mission Shakti," India's first Anti Satellite Missile Test (A-SAT), strengthening indigenous defence capabilities, the defence ministry said. BHVS Narayana Murthy who was heading RCI until recently was appointed Director-General, missiles and strategic systems, DRDO.

Source: <https://timesofindia.indiatimes.com>

DRDO successfully tests 'Nirbhay' missile; engine designed by labs in Bengaluru

The Defence Research and Development Organization (DRDO) on Wednesday successfully tested the 'Nirbhay' Indigenous Technology Cruise Missile, powered by the Made-in-India 'Manik' Turbofan Engine. The missile was designed by the Aeronautical Development Establishment, a DRDO laboratory in Bengaluru. The engine was designed and developed by another DRDO laboratory, Gas Turbine Research Establishment (GTRE), which is also based in Bengaluru. The 'Nirbhay' subsonic missile, which has a range of 1000 kilometers, was fired from a military testing facility off the coast of Odisha at around 9:55 am on Wednesday and it flew for nearly 150 kilometers in 15 minutes. A source said that the primary objective of the test was to assess the performance of the 'Manik' Small Turbofan Engine (STFE) developed by the GTRE. The engine performed well during the short-range test, paving the way for further advancement to make it more powerful and faster, the source said in New Delhi. An earlier test on October 12 last year had to be aborted due to technical snags. The 'Manik' STFE is a bypass engine of 400 kgf thrust class designed and developed by the GTRE in Bengaluru to propel the Nirbhay Missiles. The engine has several advanced features, like state-of-the-art Control System (Digital Engine Control and Advanced Fuel Controls Systems, Pyro Systems), mid-air starting with pyro devices, wide chord fan, mixed flow compressor and slinger combustor, high speed alternator, uncooled high pressure turbine blades and BLISK LPT, shrouded low pressure turbine blades, according to the DRDO. The 'Nirbhay' is the first Indigenous Technology Cruise Missile developed in India. The Aeronautical Development Establishment (ADE) based in Bengaluru led a consortium of DRDO laboratories for the indigenous design and development of the 'Nirbhay'. The missile is presently launched from a mobile articulated launcher, but it is being adopted for launch from sea and air platforms too.

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

TECHNOLOGY

Vice President Visits HAL Facilities, Calls for Developing Indigenous Cutting-edge Technologies

The Vice President, Mr Venkaiah Naidu, paid his maiden visit to HAL facilities accompanied by Mr Thaawarchand Gehlot, Governor of Karnataka here today. "I am assured of our nation's security and safety after seeing this impressive infrastructure in Aerospace and Defence," he said in his address to senior officers of HAL and ADA. He hailed the ongoing public-private partnership in various defence projects of HAL and said all efforts should be made to develop cutting-edge technologies indigenously to strengthen India's defence against the background of the complex geo-

politics. “HAL has attributes of a global leader and I envisage the Company to play a greater role in realizing India’s dream of self-reliance in aerospace and defence in the future. I am proud of the role the Company has played for the past 80 years ever since its inception. I am happy that India’s homegrown fighter LCA Tejas will be produced in large numbers and the Government has taken initiatives to galvanize the Indian Defence Industry,” he added. Hailing HAL’s sterling contributions, Mr Thaawarchand Gehlot said HAL is a unique aerospace company with a diverse range of products and is transforming itself as a lead integrator on most of the projects. “There are a lot of expectations as the Company steps into the future,” he added. Mr R Madhavan, CMD, HAL in his welcome address.

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

Trisonic wind tunnel coming up at VSSC

As part of building up its capabilities, the Indian Space Research Organisation (ISRO) is in the process of establishing a trisonic wind tunnel at the Vikram Sarabhai Space Centre (VSSC) here at Thumba. As the name suggests, the trisonic facility will enable the VSSC, which is the lead ISRO centre for launch vehicles, to carry out tests in three different speed regimes - subsonic, transonic, and supersonic. The blow-down type wind tunnel under construction at the Thumba Equatorial Rocket Launching Station (TERLS) will have a simulation range of 0.2 Mach to Mach 4 speeds. “We are planning to have the first blow-down in February 2022. It was planned for November this year, but the second wave of COVID-19 has caused some delay,” an ISRO official said. So far, ISRO has been supported by the trisonic wind tunnel at the National Aerospace Laboratory (NAL), Bengaluru. But this facility is over 50 years old. Besides, the need for a trisonic wind tunnel of its own was deeply felt by ISRO given the heft of the space missions lined up for the immediate future such as the crewed Gaganyaan project. The ISRO centre is in the process of piecing together the various components of the trisonic wind tunnel, a work which has been awarded to Tata Projects Ltd.

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

ISRO to take cooperation with European, Israeli space agencies to higher orbit

The Indian Space Research Organisation is in discussions with European and Israeli space agencies to enhance cooperation and identify potential opportunities to work together. The Secretary in the Department of Space and ISRO Chairman K Sivan held virtual meetings with Director-General of Israel Space Agency (ISA) Avi Blasberger and Director General of European Space Agency (ESA) Josef Aschbacher last week. Sivan and Blasberger reviewed the progress of the ongoing activities including cooperation in electric propulsion system for small satellites and GEO-LEO (Geosynchronous Earth Orbit-Low Earth Orbit) optical link. They also discussed potential opportunities of working together in future including the launch of Israeli satellites in the Indian launcher and commemorating the 75th anniversary of Indian independence and 30 years of India-Israel diplomatic relations through an appropriate event in 2022, an ISRO statement said. “They agreed to form thematic working groups which will discuss to identify potential opportunities for working together to further enhance ISRO-ESA cooperation”, the Bengaluru-headquartered space agency added.

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

Latest technology to the Armed Forces

DRDO has developed state-of-the-art platforms, weapon systems and sensors in the country which in turn have led to improving the combat capabilities and providing technological edge to Armed Forces. DRDO has taken projects, for development of Products/Systems, in various technology domains. Some of them are as follows:

Missiles Systems

- Airborne Early Warning
- & Surveillance Fighter Aircrafts
- Armoured Fighting Vehicles
- Bridging and Mining Systems

- Guided Munitions
- Artillery Guns
- & Rockets, Small Arms
- & Ammunitions Advanced Torpedoes
- & Advanced Sonar Suite Electronic Warfare (EW)
- Long Range Radars
- Artificial Intelligence based Systems etc.
- An amount of Rs. 1,11,463.21 crore has been allocated under Capital Acquisition Head (Modernisation) of Defence Services in BE 2021-22. This is an increase of Rs21, 415.41 crore (23.78%) over BE 2020-21 allocations. The modernization projects are being progressed as per approved capital acquisition plan and in terms of extant Defence Procurement Procedure. This information was given by Raksha Rajya Mantri Shri Ajay Bhatt in a written reply to Smt Kanta Kardam in Rajya Sabha today.

Source: <https://pib.gov.in/PressReleasePage.aspx?PRID=1741476>

Bengaluru engineering students bag top spots in design competitions

Students from two city engineering colleges have won accolades for their unique designs — a plane that can take off vertically and a car that can either run on a combustion engine or an electric one. While students from MVJ College of Engineering bagged first prize at National Aerospace Conceptual Design Competition for their design of ‘Air Taxi’ — Inter-city Electric Vertical Take-off and Landing Aircraft (ICeVTOLA) — RV College of Engineering students clinched the top spot for their design of hybrid race car at the Formula Hybrid Competition held in 2021 at New Hampshire Motor Speedway, USA. Students of the aeronautical engineering branch at MVJ College of Engineering designed an air taxi that aims to make travelling convenient while reducing congestion on roads, improving safety and mitigating emissions. The team comprised Keerthi GN, Amruthamshu KP, Koushik Udayachandran, Mithun Francis P and Atyab Hakeem. Their creation is similar to the conventional plane but can land and take off vertically, requiring less space to land and recover, making it runway independent. The MVJ team, named Abhimanyu 4.0, was awarded a cash prize of Rs 20,000 and certificates. The competition was organised by the design division and Mumbai branch of The Aeronautical Society of India. Keerthi said their product is expected to enter the market in 2031 and they now plan to publish their paper. “Our design made the cut because it was not complex and ticked all the boxes of an innovative, eco-friendly option,” she said. The Formula Hybrid Race Car designed by RV College of Engineering students won the Best Project Management award. A team of 29 students from Ashwa Racing — the racing division of Ashwa Mobility Foundation, a student research and development project undertaken by students of the college — took part in the virtual event. Members of the team conceptualise, design and construct various mobility prototypes. Dhruv Gupta, the team captain, said their prototype won owing to their project plan, ideas and design. “Ashwa Racing has secured a podium since 2017 at the Formula Hybrid event and stood first in 2020 and 2021. This year, our car has a feature which gives the driver a choice to pick a combustion engine (petrol/diesel-powered) or electric engine as per requirement,” Gupta said. “A focus on sustainable green mobility development inspired Ashwa Racing to adapt in-house developed parallel hybrid architecture. The design certainly paves the path for a future with less dependence on fossil fuels,” he said. Ravindra S Kulkarni, faculty advisor, Ashwa Racing, and prof and head, aerospace engineering department, RVCE, said the team has come a long way since its inception in 2003.

Source: <https://timesofindia.indiatimes.com/>

BUSINESS

LCA Program Gains Ground with HAL Signing Contract Worth Rs 5375 Crores with GE Aviation, USA for Supply of GE F404 Engines

HAL has placed an order of for USD 716 million (Rs 5375 crores) for 99 F404-GE-IN20 engines and support services with GE Aviation, USA to power the Tejas Light Combat Aircraft. The contract was signed here today at HAL Corporate Office. This is largest ever deal and the purchase order placed by HAL for LCA", said Mr. R. Madhavan, CMD, HAL. The Company is working closely with GE for its support to pursue the export potential of LCA and also to supply spares to the global supply chain of GE 404 engines, he added. Mr. Chris Cyr, Vice President, Business Development & Sales, GE Aviation who interacted virtually said his company is proud of 16-year-long partnership with HAL and is happy to extend the relationship with this new order. "The F404 family of engines has proven itself in operations all over the world and we have committed to deliver all 99 engines and support services by 2029", he added. The indigenously built Tejas aircraft is one of the best in its class globally, powered by F404-GE-IN20 engines and has been in service since 2004. Ordering of the engines, marks a major milestone in the execution of 83 LCA contract with IAF. The co-operation will be further enhanced with the manufacturing of GE F414 engines in India for the upcoming LCA MkII program. The highest thrust variant of the F404 family, the F404-GE-IN20 incorporates GE's latest hot section materials and technologies as well as FADEC for reliable power and outstanding operational characteristics. The F404 family engines have logged in more than 14 million engine flight hours, and has powered 15 different production and prototype aircraft.

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

Adani, L&T, others vie to build ISRO's launch vehicles: Report

DH Web Desk, AUG 27 2021, 17:52 ISTUPDATED: AUG 27 2021, 18:34 IST Representative image. Credit: Special arrangement Adani Group and L&T, as separate consortiums, and Bharat Heavy Electricals Limited (BHEL), as a single firm, are competing to acquire a PSLV contract to build 5 launch vehicles, making it the first time any entity other than ISRO will be involved in building a launch vehicle. The report further mentions that the contract to be the licensed producer of the PSLV is likely to be awarded by the end of 2021. All three entities had placed their bids for the same on July 30 after NewSpace India Limited (NSIL) had issued a request for proposal (RFP) on the contract. NSIL is a PSU that is functioning under the Department of Space (DoS). "There were five players who responded to the expression of interest (EOI); three have submitted bids after the RFP just over three weeks ago," a senior official told the publication. Hindustan Aeronautics Limited (HAL) and L&T have formed one group, while Adani-Alpha Design, Bharat Electronics Limited (BEL) and Bharat Earth Movers Limited (BEML) have formed the other group for this. NSIL Managing Director and Chairman Radhakrishnan D said that the techno-commercial evaluation was under way, after which the bids will be opened. He added that he was hopeful of completing the process in a "couple of months." The contract, along with strengthening the Make in India initiative, also aims at expanding ISRO's capabilities, the report added.

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

Midhani supplies titanium alloy for medium combat jets' airframe

Hyderabad: As India works to further strengthen its armed forces by equipping them with the advanced medium combat aircraft (AMCA), Hyderabad-based defence PSU, Midhani, has begun supplying the titanium alloy material needed to make the airframe for the aircraft. "The airframe is an important part of AMCA which is being developed for the first time in India. Other structures come up on airframe and to make it, we have provided a strategic titanium alloy. Some of the requirements have already been met," Midhani CMD Mr Suresh Kumar Jha told. It was decided that the needed material would be developed indigenously under the Atmanirbhar Bharat programme, the technology for it was developed at Midhani. While five slabs have been supplied so far, another seven will be supplied in due course for the work that has begun on the AMCA. Midhani has used a similar technology that it used to provide a specialised titanium alloy used in the making of the crew escape system of ISRO's Gaganyaan programme. When the advance fighter jet becomes a reality, it will be a crucial arrow in the quiver of the Indian Air Force. With AMCA, India will be joining an elite club of countries which have a fifth generation combat aircraft. The plan is to have 120 stealth fighters to give muscle to the IAF and also the Indian Navy. The aircraft design is by Aeronautical Development Agency (ADA)

under the ministry of defence with DRDO and HAL working on the project. Going by what Indian Air Force chief RKS Bhaduria said last year, the DRDO has set a target to roll out the AMCA by 2027. In the second phase of the production, sixth generation technologies will be included in the stealth fighter. Also by 2032, the IAF will have at least 18 squadrons of fighter jets if plans were to materialise.

Source: <https://timesofindia.indiatimes.com>

How many aircraft carriers does India need?

After two decades of protracted wait, India's first indigenous aircraft carrier IAC-1, or Vikrant, has just completed its first field trials. When it is eventually commissioned into the Indian Navy, India would once again have the luxurious comfort of two carriers. Concurrently, the Indian Navy is also gunning for go-ahead sanction to initiate the IAC-2 project towards a larger aircraft carrier in due course. All these issues necessitate discussion about a fundamental doubt – how many aircraft carriers does India need? Assuming we want more, do we have that kind of money to build and operate another carrier? The political economy of big war machines has always engendered debate about their usage and cost-effective alternates. Aircraft carriers do not curry favour with finance ministries in great powers as they entail huge capital expenditure (Capex) along with operating expenditure (Opex). Today, the average cost of building an armed mid-size carrier is touching \$10 billion (Rs 75,000 cr). The American Navy that uses aircraft carriers as the centerpiece of its power projection approach is seriously debating several issues such as big versus small carriers, conventional vs nuclear fuel, and the very number of active carriers in future. When India bought INS Virat from the UK and commissioned it in 1987, it was only logical since the Indian Navy now had a tradition and experience of more than 25 years in operating an aircraft carrier. Admiral Gorshkov's procurement from Russia (INS Vikramaditya) in 2004 was, nevertheless, painful due to humongous cost escalations, negotiation complexities, delayed delivery and commissioning, and now, recurring refits. The IAC-1, therefore, is a significant milestone in indigenisation and puts a curtain on imported carriers and Gorshkov-type bitterness. On the face of it, another IAC would provide further boost to domestic shipbuilding industry and proliferate dual-use technologies. Any decision making gap at this stage may mean losing out on technological gains and know-how in the specialised field of aircraft carrier engineering. Moreover, while IAC-1 is of 45,000 tonnage and based on STOVAR (short take-off but arrested recovery) launching and landing system, the IAC-2 would be a bigger carrier (up to 65,000 tonnes), based on CATOBAR (catapult assisted take-off but arrested recovery) technology. Officially, therefore, the Indian Navy has been pushing for a three-carrier based maritime strategy. Is the Indian Navy's desire for three carriers just? Should we go for the IAC-2 at least? There are many financial considerations that militate against a go-ahead for IAC-2. First, aircraft carriers have not provided commensurate returns in India's war history. Even INS Virat and Vikramaditya have not undertaken any major operational role. Second, while the US maintains 12 carriers and China and the UK have two each, other military powers have only one carrier each. This despite that most of these countries are cash-rich. That brings an important consideration: when military powers like Russia and France, having global spread, are doing with one, why India's wish list stretches to two or three? Third, a futuristic carrier would mean \$9-10 billion defrayed over six-to-seven years. It is also committed to spend \$6 billion over next few years for the indigenous submarine project as well as \$3 to 4 billion for furnishing the IAC-1 with jets. Where will the money come from? India's strategic threats in foreseeable future would perpetuate from the land borders with China and Pakistan, including a dreadful scenario of two-front war. Contemporary maritime threats, on the other hand, are manageable with partial increase in current fleet resources without aiming at pax Indica. Policy suggestion for converting the Andaman group of islands into an affordable, nonfloating and unsinkable carrier deserves consideration. We lost the opportunity to debate 'does India need an aircraft carrier' in fifties and got swayed away by irrational foreign advisory. Today, we are at the cusp of another debate. We need to discuss our past mistakes, emerging global perspective on carriers, availability of cost-effective alternates, and above all, the financial resources. Probably, that would facilitate public policy clarity about India's requirement for more aircraft carriers.

Source: <https://timesofindia.indiatimes.com/>

EVENT

SAE India is organising “**AeroCON 2022**” a biennial international conference for aerospace engineering community on the 2-3rd June ‘2022 in Bengaluru.

The theme of the conference is

“ **Autonomous Airborne Systems- Trends, Challenges & Opportunities.**”

Details about the conference can be seen using the link below.

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