



E-NEWS

EVERY MONTH FROM THE AERONAUTICAL SOCIETY OF INDIA

VOLUME - 19

March 2024

RELEASE - 03

Current Affairs

Technology

Business

Awards

Advertisements

Covering the Period from
(01 February 2024 to 29 February 2024)



DRDO carries out successful flight trials of
High-speed Expendable Aerial Target

NAL tests drone-like prototype at
Karnataka's Challakere



Publisher

Journal of Aerospace Sciences
And Technologies
The Aeronautical Society of India
Bangalore Branch Building
New Thippasandra Post
Bangalore 560 075
Karnataka, INDIA
Phone No : +91 80 25273851
Email: editoraesi@yahoo.com
Website: www.aerjournalindia.com

Publication Team

Dr R Balasubramaniam
Dr S Kishore Kumar
Dr P Raghothama Rao
Mrs Chandrika R Krishnan
Mr Hemanth Kumar R
Mr Kumaran A K M

Advertisement – Tariff

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

Head Quarters

The Aeronautical Society of India
13-B, Indraprastha Estate
New Delhi 110 002, India
Tel: +91 11 23370516
Fax: +91 11 23370768

Eminent Indian Aeronautical and Aerospace Personalities in India

Series:13

AKELLA KAMESWARA RAO



(17 September 1929 - 1 December 2005)

A KELLA KAMESWARA RAO (“AKR” to his students and colleagues in India and “Kamesh” to his friends abroad) was born on 17th September, 1929, in Madras, India. His parents, Akella Kasipati and Venkatalakshamma, moved from Kakinada to Madras where his father, a self-taught entrepreneur, built a successful family business in pharmaceuticals, banking, exports and imports. Born in well to do circumstances, AKR had to deal with the double tragedy of losing his father and the family holdings by the age of 12. This seminal event shaped AKR: a rare generosity, tremendous self-confidence, a “can-do” attitude, and an entrepreneur’s eye that always looked at both the technical and business aspects of a problem. AKR often recollected that his father molded him during this brief period -

The editorial team invites your views, suggestions, to the News about Members Column and contributions to the e-news.

For more information about Journal of Aerospace Sciences and Technologies Log on to our Website : www.aerjournalindia.com

instilling a love of books and a strong sense of fairness and integrity. AKR had his early schooling in Madras and Andhra a brilliant student, He earned a dual degree in Mechanical and Electrical Engineering from the Banaras Hindu University in 1949. AKR then earned his post-graduate DIISc in Aeronautics from the Indian Institute of Science (IISc) in 1951, topping his class again. He worked in the Department of Civil Aviation under his mentor, Dr PS Nilakantan. Deputed by the Government of India on an Assam Oil Co. scholarship in 1954, AKR received his DIC and Ph D in 1958 from London University's Imperial College of Science and Engineering. His thesis on Load Diffusion and Stress Concentration was advised by Professor JH Argyris, who pioneered the development and use of the Energy Theorems and Finite Element Methods in solving structural engineering problems.

PROFESSIONAL CAREER

After his Ph D in Imperial College, London, UK, AKR worked for two years as a Senior Design Engineer in Folland Aircraft Ltd. UK. He was responsible for developing design standards to meet fatigue performance requirements - techniques that were used in the design of the GNAT fighter and trainer aircraft (and, subsequently, to the Harrier V/STOL attack fighter). In 1959, AKR returned to the Indian Institute of Science as an Assistant Professor in Aerospace Engineering, becoming a Professor in 1967, a Senior Professor in 1973 and the KSIIDC Chair in the 1980s; he continued to work there till his retirement in 1990. During this period, he developed an outstanding school of graduate studies in structural engineering and design. In the 1960s, he collaborated with Professor AA Lebedinsky of the Moscow Aviation Institute to create an extensive course in Aircraft Design and developed this into a textbook established links with Lockheed International Research Institute, Atlanta; NASA Langley Research Center, Hampton; and Boeing Aircraft Company, Seattle, all in USA. In the post-retirement period, Professor AKR worked as a CSIR Scientist Emeritus at the National Aerospace Laboratories, Bangalore, as Director of the Engineering Staff College of India, Hyderabad, and as Advisor, Learning Technologies, Satyam Computer Services Limited, Hyderabad.

PRESIDENT VISITS

IISc Incubated startup SpaceFields, raises first institutional funding \$800,000 (Rs 6.5 crore).

They specialized in designs and builds dual-use rocket propulsion systems, has raised \$800,000 (Rs 6.5 crore) in a seed round led by HVB 88 Angels and O2 Angels Network. This is the first round of institutional and external fundraise at the company. Recently, SpaceFields, won of Boeing University Innovation Leadership Development (BUILD) program - Second edition, Picture: SpaceFields team with Dr G Satheesh Reddy, President, The Aeronautical Society of India and several other dignitaries. The startup – supported by the governments of India, Karnataka, Odisha and incubated



Society of Failure Analysis (SFA-India) organized National seminar on “Failure Analysis for Metallurgical Industries” (FAME-2024) at Hyderabad.

SFA's mission is to promote, encourage and develop the growth of “Art and Science of Failure Analysis” and to stimulate interest in failures and their prevention by compiling requisite database so as to effectively identify the root cause of failures and, importantly, to mitigate such failures in future.

Dignitaries Dr. V.K. Saraswat, Member of NITI Aayog, Dr. G. Satheesh Reddy, President, The Aeronautical Society of India, and Former Chairman, DRDO, Ministry of Defence, Govt. of India & Secretary, DDR&D, Dr. S.K. Jha, C&MD, Midhani, President, SFA and Chairman, Organizing Committee, Dr. R. Balamuralikrishnan R. Director, DMRL, Dr. S Satyanarayana, former principal director, CITD were there on the occasion.



Indigenous micro turbojet engine unveiled by Hyderabad-based firm in partnership with Indian Institute of Technology Hyderabad

RAGHU VAMSI MACHINE TOOLS PRIVATE LIMITED (RVMT), a leading player in the Aerospace and Defence industry, launched its fully indigenous Micro Turbojet Engine ‘INDRA RV25: 240N’ in the presence of Dr G Satheesh Reddy, President, The Aeronautical Society of India and former Scientific Advisor to Raksha Mantri and former Chairman DRDO, Ministry of Defence, Govt. of India. The development and launch of indigenously developed micro turbojet engine, a first of its kind in India, signifies a remarkable achievement for India’s aerospace sector and underscores companies’ capability to design, manufacture and deploy cutting-edge aerospace and defense technologies on a global scale. The fully indigenous Micro Turbojet Engine “INDRA RV25: 240N” include indigenous design and engineered entirely in India by RVMT team and supported by IIT, Hyderabad, which is a great demonstration of the potential of Industry-Academia partnership. It reduces reliance on imported technologies, components, and expertise, the Micro Turbojet Engine contributes to India’s goal of achieving self-sufficiency in critical sectors, bolstering national security and economic resilience. The launch of the indigenous Micro Turbojet Engine not only drives technological innovation but also stimulates the growth of the domestic aerospace and defence manufacturing ecosystem, creating jobs and fostering economic growth.



CURRENT AFFAIRS

Successful completion of Human rating of CE20 Cryogenic engine for the Gaganyaan Programme

ISRO has accomplished a major milestone in the human rating of its CE20 cryogenic engine that powers the cryogenic stage of the human-rated LVM3 launch vehicle for Gaganyaan missions, with the completion of the final round of ground qualification tests on February 13, 2024. The final test was the seventh of a series of vacuum ignition tests carried out at the High Altitude Test Facility at ISRO Propulsion Complex, Mahendragiri, to simulate the flight conditions. The ground qualification tests for the human rating of the CE20 engine involved life demonstration tests, endurance tests, and performance assessment under nominal operating conditions as well as off-nominal conditions w.r.t thrust, mixture ratio, and propellant tank pressure. All the ground qualification tests of the CE20 engine for the Gaganyaan programme have been successfully completed. In order to qualify the CE20 engine for human rating standards, four engines have undergone 39 hot firing tests under different operating conditions for a cumulative duration of 8810 seconds against the minimum human rating qualification standard requirement of 6350 seconds. ISRO has also successfully completed the acceptance tests of the flight engine identified for the first unmanned Gaganyaan (G1) mission tentatively scheduled for Q2 of 2024. This engine will power the upper stage of the human-rated LVM3 vehicle and has a thrust capability of 19 to 22 tonnes with a specific impulse of 442.5 seconds.



Source: https://www.isro.gov.in/Successful_completion_Human_rating_CE20_Cryogenic_engine.html

DRDO carries out successful flight trials of High-speed Expendable Aerial Target 'ABHYAS' from Integrated Test Range, Chandipur

Four flight trials of High-speed Expendable Aerial Target (HEAT) - ABHYAS were successfully carried out by Defence Research & Development Organisation (DRDO) from the Integrated Test Range, Chandipur in Odisha during January 30 to February 02, 2024. The trials were conducted with four different mission objectives in a revised robust configuration using a single booster designed by Advanced Systems Laboratory, Hyderabad to provide reduced launch acceleration. The objectives like safe release of booster, launcher clearance and attaining the required end of launch velocity were achieved. During the flight trials, various parameters like required endurance, speed, manoeuvrability, altitude and range were successfully validated. Designed by DRDO's Aeronautical Development Establishment (ADE), ABHYAS offers a realistic threat scenario for practice of weapon systems. It is designed for autonomous flying with the help of an auto pilot indigenously made by the ADE. It has Radar Cross Section, Visual and Infrared augmentation system required for weapon practice. It has a laptop-based Ground Control System with which the aircraft can be integrated and pre-flight checks, data recording during the flight, replay after the flight and post-flight analysis can be carried out. ABHYAS requires minimum logistics and is cost effective compared to imported equivalents. The systems tested recently were realised through Production Agencies – Hindustan Aeronautics Limited (HAL) and Larsen & Toubro (L&T) Defence.

With identified production agencies, ABHYAS is ready for production. The system has export potential and can be offered to friendly countries. Raksha Mantri Shri Rajnath Singh has congratulated the DRDO, the Armed Forces and the Industry for the successful flight trial of ABHYAS. The development of this system will meet the requirements of aerial targets for the Armed Forces, he said. Secretary, Department of Defence R&D and Chairman DRDO Dr Samir V Kamat appreciated the efforts of the teams associated in the design, development and testing of the system.



Source: <https://pib.gov.in/PressReleasePage.aspx?PRID=2002709>

IAF Team Inducts for the Singapore Air Show 2024

A team of 71 personnel of Indian Air Force's (IAF) Sarang Helicopter Display Team landed at the Paya Lebar Air Base of Singapore to participate in the Singapore Air Show 2024. The world renowned Sarang Helicopter Display Team will be showcasing its spectacular aerobatics manoeuvres at this event with five Advanced Light Helicopters (ALH) also known as 'Dhruv'. The induction was carried out with the IAF's C-17 Globemaster III heavy lift transport aircraft. The biennial Singapore Air Show is scheduled to commence on 20 Feb 24 and shall conclude on 24 Feb 24. The show features various aerial displays from participants from all over the globe. The Sarang Helicopter Display Team was formed in 2003 and it is noteworthy that their very first International public performance was in 2004, at Asian Aerospace Show Singapore itself. Initially formed and raised as a three helicopter formation, the Sarang team now boasts of a thrilling fivehelicopter display and has performed over 1200 displays at more than 385 venues all around the globe. The 'Dhruv' helicopter, designed and conceived by Hindustan Aeronautics Limited is an allweather, multi-mission capable helicopter. It features rigid, hinge- less rotors making it highly manoeuvrable and suitable for military roles. The variant of ALH flown by Sarang team is ALH MK-I. The other variants are ALH Mk-II, ALH MK-III and the latest variants is ALH MK IV, an armed version.

Source: <https://pib.gov.in/PressReleasePage.aspx?PRID=2005395>

PM Modi inaugurates three major ISRO space infrastructure projects

Prime Minister Narendra Modi on Tuesday inaugurated 3 major space infrastructure projects of ISRO during his visit to the Vikram Sarabhai Space Centre (VSSC) at Thumba near here. The Prime Minister also reviewed ISRO's Gaganyaan human spaceflight programme during his visit. Modi, accompanied by Kerala Governor Arif Mohammed Khan, Chief Minister Pinarayi Vijayan and Minister of State for External Affairs V Muraleedharan, also took a walkthrough of the exhibition of the various ISRO projects showcased at VSSC, the lead centre of the Indian Space Research Organisation, is responsible for the design and development of launch vehicle technology. The Trisonic Wind Tunnel at VSSC produces controlled uniform airflow over scaled models of rockets and aircraft to evaluate their aerodynamic characteristics and designs. It features a test section size of 1.2 meters and can generate speeds ranging from subsonic to supersonic, up to 4 times the speed of sound (Mach number 4.0). The Mahendragiri unit is a state-of-the-art facility capable of handling large flows of propellants. It stands 51 meters tall and has a flame deflector depth of 30 meters. The PSLV Integration Facilities at Sriharikota were developed to increase launch frequency from the First Launch Pad (FLP) and

include Integration Building, Service Building, Rail Track, and associated systems. These inauguration of these facilities mark significant advancements in India's space exploration capabilities.

Source: <https://www.deccanherald.com/india/pm-modi-inaugurates-three-major-isro-space-infrastructure-projects-2911869>

PM Modi reveals names of 4 astronauts for India's first manned space mission

After months of speculation, Prime Minister Narendra Modi on Tuesday disclosed the names of the four Indian astronauts, who are all highly experienced Indian Air Force test pilots. In that group, a few of them will travel to space next year in an Indian spacecraft. Group Captains Prasanth Balakrishnan Nair, Ajit Krishnan and Angad Pratap, and Wing Commander Shubhanshu Shukla are the four astronauts selected for the ambitious Gaganyaan programme, which is currently going through the final set of testing trials. "The four astronaut-designates are not just four names or individuals, they are four Shakti carrying the aspirations of 140 crore Indians into space," the prime minister said while bestowing the 'astronaut wings' to the four at a function at Vikram Sarabhai Space Centre in Thiruvananthapuram. Attired in half-blue and half-white uniforms, the four astronauts are IAF test pilots with a minimum of over 2,000 hours of flying experience. The senior-most of them is Group Captain Prasanth Balakrishnan Nair, who has over 3,000 hours of flying experience and has the experience of commanding a Su-30 squadron. The IAF veteran with a call sign, Papa, will be the team leader.



'Big difference'

Modi, who reviewed the progress of the Gaganyaan mission, said an Indian would be going to space 40 years after Rakesh Sharma in 1984, but a big difference is that this time the spacecraft and the rocket would be indigenous unlike the Russian Soyuz T-11 rocket that took Sharma—also an IAF test pilot—to space. While Gr Cap Nair, Krishnan, and Pratap are flying instructors, Shukla is a flight combat leader. All of them have extensively flown IAF combat jets like Su-30MKI, MiG-21, MiG-29, and Hawk, besides transport aircraft like the AN-32 and Dornier. Barring Nair, the other three have also flown the Jaguar. Test pilots are generally chosen as astronauts because of their experience of handling new aircraft or systems that generally come with inherent risks. While lauding the dedication of the astronauts, Modi cautioned that the celebrity attention to the four could create disturbances in their training. He appealed for cooperation with the astronaut-designates and their families so that they could continue their training without any distraction. The IAF pilots were selected through a meticulous selection process and were imparted rigorous 13 months of training at Russia's Gagarin Cosmonaut Training Centre on several areas, including aerobatic flight and survival training. They are now undergoing training in Isro's new facility using simulators and virtual reality tools. Special yoga modules have also been prepared for them as part of ensuring physical fitness. Gaganyaan — the country's maiden human space flight mission — envisages demonstration of human spaceflight capability by launching a crew of three members to an orbit of 400 km for three days mission and bring them back safely to earth by landing in Indian sea waters.

Space station by 2035 the future mission

The prime minister said that by 2035, India would have its own space station. He said that Indian space scientists would also be exploring Venus, apart from going to the Moon once again and retrieving samples from the surface. "India is becoming a global commercial hub in the field of space. The country's space economy will grow fivefold and touch 44 billion dollars in the next 10 years," the prime minister said. Modi inaugurated three major space infrastructure projects worth Rs 1,800 crore - the PSLV integration facility at Satish Dhawan Space Centre in Sriharikota, the semi-cryogenics integrated engine and stage test facility at the Isro propulsion complex at Mahendragiri, and the Trisonic Wind Tunnel at VSSC.

Source: <https://www.deccanherald.com/india/pm-modi-announces-astronaut-designates-for-gaganyaan-mission-2911873>

TECHNOLOGY

GSLV-F14/INSAT-3DS MISSION

The launch of the GSLV-F14/INSAT-3DS mission is accomplished on Saturday, February 17, 2024, at 17:30 Hrs. IST from SDSC-SHAR, Sriharikota. In its 16th mission, the GSLV aims at deploying the INSAT-3DS meteorological satellite into the Geosynchronous Transfer Orbit (GTO). Subsequent orbit-raising maneuvers will ensure that the satellite is positioned in a Geo-stationary Orbit.

GSLV-F14

Geosynchronous Satellite Launch Vehicle (GSLV) is a three-stage 51.7 m long launch vehicle having a liftoff mass of 420 tonnes. The first stage (GS1) comprises a solid propellant (S139) motor having 139-ton propellant and four earth-storable propellant stages (L40) strap-ons which carry 40 tons of liquid propellant in each. The second stage (GS2) is also an earth-storable propellant stage loaded with 40-ton propellant. The third stage (GS3) is a cryogenic stage with a 15-ton propellant loading of liquid oxygen (LOX) and liquid hydrogen (LH2). During the atmospheric regime, the Satellite is protected by Ogive payload fairing. GSLV can be used to launch a variety of spacecraft capable of performing communications, navigation, earth resource surveys, and any other proprietary mission.

INSAT-3DS

INSAT-3DS Satellite is a follow-on mission of Third Generation Meteorological Satellite from Geostationary Orbit. GSLV-F14/INSAT-3DS mission is fully funded by the Ministry of Earth Sciences (MoES). It is designed for enhanced meteorological observations and monitoring of land and ocean surfaces for weather forecasting and disaster warning. The satellite will augment the Meteorological services along with the presently operational INSAT-3D and INSAT-3DR satellites. Indian Industries have significantly contributed to the making of the Satellite.

Various departments of the Ministry of Earth Sciences (MoES) such as the India Meteorology Department (IMD), National Centre for Medium-Range Weather Forecasting (NCMRWF), Indian Institute of Tropical Meteorology (IITM), National Institute of Ocean Technology (NIOT), Indian National Center for Ocean Information Services (INCOIS) and various other agencies and institutes will be using the INSAT-3DS Satellite data to provide improved weather forecasts and meteorological services.

The primary objectives of the mission are:

- To monitor Earth's surface, carry out Oceanic observations and its environment in various spectral channels of meteorological importance.
- To provide the vertical profile of various meteorological parameters of the Atmosphere.
- To provide the Data Collection and Data Dissemination capabilities from the Data Collection Platforms (DCPs).
- To provide Satellite Aided Search and Rescue services.



Source: https://www.isro.gov.in/GSLV-F14_INSAT-3DS_mission.html

Big leap in Space Defence Technology: Green Propulsion System, developed under DRDO's Technology Development Fund, successfully demonstrates in-orbit functionality

A Green Propulsion System, developed under the Technology Development Fund (TDF) scheme of DRDO, has successfully demonstrated in-orbit functionality on a payload launched by PSLV C-58 mission. This project - 1N Class Green Monopropellant thruster for altitude control and orbit keeping of micro satellite - was sanctioned to a Bengaluru-based start-up Bellatrix Aerospace Pvt Ltd (Development Agency). The Telemetry Data from PSLV Orbital Experimental Module (POEM) at ISRO Telemetry, Tracking and Command Network (ISTRAC), Bengaluru has been validated with ground level solution and is found to have exceeded all performance parameters. This innovative technology has resulted in non-toxic and environment-friendly propulsion system for low orbit space. The system consists of indigenously-developed Propellant, Fill and Drain Valves, Latch Valve, Solenoid Valve, Catalyst Bed, Drive Electronics, etc. It is ideal for space mission with high thrust requirements. The complete project has been carried out by the Development Agency under guidance of Project Monitoring & Mentoring Group of DRDO. It has demonstrated pulsed mode and steady state firing in vacuum, passivation of residual propellant in outer space, propellant realisation and establishing of filling procedure under the TDF. The TDF is a flagship programme of Ministry of Defence executed by DRDO under the 'Make in India' initiative for funding innovation in defence and aerospace, especially to start-ups and MSMEs.

Source: <https://pib.gov.in/PressReleasePage.aspx?PRID=2001210>

Digital Flight Control Computer for Tejas Mk1A Flown Successfully

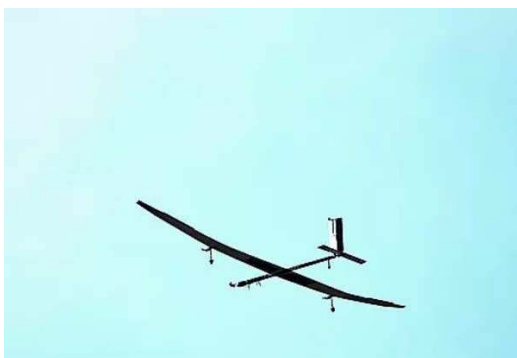
In a significant development towards Tejas Mk1A programme, the Digital Fly by Wire Flight Control Computer (DFCC) was integrated in prototype LSP7 and successfully flown on 19th Feb 2024. DFCC has been indigenously developed by the Aeronautical Development Establishment (ADE), Bengaluru for the Tejas - Mk1A. Digital Fly by Wire Flight Control Computer features Quadraplex Power PC based Processor, high speed autonomous state machine based I/O controller, enhanced computational throughput and complex on-board software complied to DO178C level-A safety requirements. All critical parameters and performance of the flight controls were found satisfactory. The maiden flight was piloted by Wg Cdr Siddarth Singh KMJ (Retd) of National Flight Test Centre. Aeronautical Development Agency, under the aegis of Department of Defence R&D and Ministry of Defence has successfully type certified Tejas-Light Combat aircraft (LCA). Indian Air Force has already operationalised Tejas LCA Mk1. The improved version of the aircraft, Tejas MK1A features advanced mission computer, high performance Digital Flight Control Computer (DFCC)

Mk1A), Smart Multi-Function Displays (SMFD), Advanced Electronically Scanned Array (AESA) Radar, Advanced Self-protection Jammer, Electronic Warfare Suit etc. Raksha Mantri Shri Rajnath Singh complimented joint teams from DRDO, IAF, ADA and industries involved in the development and successful flight test of this critical system for Tejas Mk1A and termed it as a major step towards Atmanirbhara with reduced count of special imports. Secretary DDR&D and Chairman DRDO congratulated the teams involved in the successful flight test which has boosted the confidence towards delivery of Tejas MK1A to IAF in a stipulated time frame.

Source: <https://pib.gov.in/PressReleasePage.aspx?PRID=2007465>

NAL tests drone-like prototype at Karnataka's Challakere

Scientists from city-based National Aerospace Laboratories (NAL), a Council of Scientific and Industrial Research (CSIR) lab, achieved a breakthrough by successfully testing an unmanned aerial vehicle called High-Altitude Pseudo Satellite (HAPS) at Chitradurga's Challakere earlier in Feb. L Venkatakrisnan, chief scientist and programme director (high-altitude platform) at NAL, told TOI: "HAPS is similar to drones but is designed to hover in the stratosphere above the airspace used by commercial airplanes. This platform, which can be powered by solar cells and batteries, can be operated for up to 90 days while regular high-altitude long-endurance (HALE) drones operate for about 48 hours at best." He said HAPS platforms are of interest to military operators for intelligence, surveillance roles. They can also be used for civilian roles by acting as telecommunication satellites mainly in case of environmental disasters. "Compared to satellites, HAPS, which operates in the stratosphere, offers lower latency and less path loss," Venkatakrisnan said. It can also be deployed multiple ground stations simultaneously. "The HAPS we tested in Challakere is a prototype. It's a scaled-down 5-metre-long system with 12-metre wingspan, weighing 23kg. By 2027, we're confident of building a full-scale version that could have a wingspan of under 30m and weigh more than 100kg but less than 150kg. It will be able to carry payloads weighing 15kg and have multiple uses," Venkatakrisnan explained. During the trials, the prototype rose to an altitude of 2.7km and remained airborne for 8.5 hours. It met all targeted performance metrics, as per the scientists associated with the project. This is part of a series of planned tests by CSIR-NAL to develop a full-scale 30-metre-wingspan HAPS by 2027 that can fly at 23km altitude for at least 90 days. Pointing out that HAPS requires significant engineering expertise to fly unmanned for days using solar-powered batteries instead of jet fuel and withstand atmospheric turbulence despite being a lightweight structure, Venkatakrisnan said tests of the battery management system and the propeller for the full-scale version will be completed by Sept 2024. "The realisation of the full-scale airframe is aims to achieve by 2027. As of now, the only functional HAPS in the world is the Airbus Zephyr, which means we aren't really far off so far as the technology goes," he added.



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

IIT Kanpur achieves major milestone with India's First Hypervelocity Expansion Tunnel Test Facility

The Indian Institute of Technology Kanpur (IITK) has successfully established and tested India's first Hypervelocity Expansion Tunnel Test Facility, a major achievement that puts India amongst only a handful of countries with this

advanced hypersonic testing capability. The facility, named S2, is capable of generating flight speeds between 3-10 km/s, simulating the hypersonic conditions encountered during atmospheric entry of vehicles, asteroid entry, scramjet flights, and ballistic missiles. This makes it a valuable test facility for ongoing missions of ISRO and DRDO including Gaganyaan, RLV, and hypersonic cruise missiles. The S2, nicknamed 'Jigarthanda', is a 24-meter-long facility located at IIT Kanpur's Hypersonic Experimental Aerodynamics Laboratory (HEAL) within the Department of Aerospace Engineering. The S2 was indigenously designed and developed over a period of three years with funding and support from the Aeronautical Research and Development Board (ARDB), the Department of Science and Technology (DST), and IIT Kanpur. Commenting on this, Prof. S. Ganesh, Director, IIT Kanpur, said, "The successful establishment of S2, India's first hypervelocity expansion tunnel test facility, marks a historic milestone for IIT Kanpur and for India's scientific capabilities. I congratulate Prof. Sugarno and his team for their exemplary work in designing and fabricating the hypersonic research infrastructure. S2 will empower India's space and defence organizations with domestic hypersonic testing capabilities for critical projects and missions." Prof. Mohammed Ibrahim Sugarno, Associate Professor, Department of Aerospace Engineering and Centre for Lasers & Photonics at IIT Kanpur said, "Building S2 has been extremely challenging, requiring in-depth knowledge of physics and precision engineering. The most crucial and challenging aspect was perfecting the 'free piston driver' system, which requires firing a piston at high pressure between 20-35 atmospheres down a 6.5 m. compression tube at speeds of 150-200 m/s, and bringing it to a complete stop or 'soft landing' at the end." "However, with our expertise, we were able to overcome this. Our team is proud to have designed, built, and tested this one-of-a-kind facility, cementing India's position in the elite global hypersonic research community," he added. Prof. Tarun Gupta, Dean, Research and Development, IIT Kanpur, said, "S2 highlights IIT Kanpur's research excellence, positioning the institute at the forefront of innovative research and opening doors to groundbreaking advancements in aerospace technology. I am pleased to acknowledge the crucial support received from ARDB and DST." Prof. G. M. Kamath, Head, Department of Aerospace Engineering, IIT Kanpur, said, "With S2, we advance our research horizons, inspiring a new generation of aerospace enthusiasts and fostering innovation and exploration in this exciting field. Being the first in India to develop such a facility enables us to set a new benchmark for hypervelocity research in India and beyond." S2 represents a tremendous achievement for IIT Kanpur and a major capacity boost for India's space and defence sectors. With sophisticated hypervelocity testing capabilities now available domestically, India is better positioned to develop advanced hypersonic technologies and systems.

Source: www.iitk.ac.in.

BUSINESS

DRDO hands over 23 Licensing Agreements for Transfer of Technology to industries during Maharashtra MSME Defence Expo 2024

To enhance cooperation and synergy with the industry, Defence Research and Development Organisation (DRDO) organised a DRDO-Industry Meet on February 25, 2024 during the Maharashtra MSME Defence Expo 2024 at Pune. The meet was intended to apprise and update industries, especially the MSMEs & start-ups about various industry-friendly initiatives and policies of DRDO as well as address the concerns of the industry. During the meet, DRDO handed over 23 Licensing Agreements for Transfer of Technology (LATOT) to 22 industries in presence of Secretary Department of Defence (R&D) and Chairman DRDO Dr Samir V Kamat and other dignitaries. The technologies transferred cover the domains of electronics, laser technology, armaments, life sciences, materials science, combat vehicles, naval systems and aeronautics. These include Manufacturing of Carbon/Carbon Aircraft brakes for LCA Tejas, 100 m Infantry Foot Bridge Floating, 40 mm High Explosive Anti-Personnel (HEAP) Grenade for UBGL, Full Trailer of 70t Tank Transporter for MBT Arjun Mk - 1A, Expendable Mobile Shelter Solar Heated Shelter, NMR-Supercapacitor, Weaponisation of Hand-Held Thermal Imager with LRF (WHHTI) and High Pressure Water Mist Fire Suppression System (HP WMFSS). The products based on these DRDO technologies will further boost the defence manufacturing sector and self-reliance

in defence. The DRDO handed over SAMAR (System for Advance Manufacturing Assessment and Rating) assessment certificates to nine Industry Partners. SAMAR is a benchmark to measure the competency of defence manufacturing enterprises. A brief and overview on SAMAR was also provided during the function. Addressing Industry partners, Dr Kamat iterated DRDO's commitment to provide all technology support towards the development of Indian defence industries for realisation of Aatmanirbhar Bharat as envisioned by Prime Minister Shri Narendra Modi. He elaborated that the recent success of DRDO products have not only made the country more self-reliant in defence technology but also provided immense opportunities to the industries in defence manufacturing sector. He further stressed that the industries are invaluable partners and it is an apt time for an Indian industry to take advantage of the latest initiatives and policies of the Government and make the country a hub of defence manufacturing. An Open house session during the meet was also organised which provided an opportunity to industries to express their challenges, expectations and the kind of support needed so that framework may be refined to further ease of doing business and facilitate industry. The Industry was also briefed about the latest policies and procedures through which DRDO is supporting industries. Some of the policies discussed include Transfer of Technologies, Test & Evaluation support, Technological and scientific support, R&D funding to industry under TDF and Free use of DRDO patents by industry and SAMAR scheme.

Source: <https://pib.gov.in/PressReleasePage.aspx?PRID=2008923>

Aeronautical Development Agency signs MoU with Indian Air Force

Aeronautical Development Agency (ADA) has signed an MoU with the Indian Air Force (IAF) for integration of futuristic Weapons and Sensors for LCA Tejas aircraft. The MoU was signed by Shri Prabhulla Chandran VK, Technology Director (Avionics and Weapon Systems) of ADA and Air Vice Marshal KN Santosh VSM, Commandant, Software Development Institute (SDI) of IAF. Aeronautical Development Agency (ADA) is a premier organization under the aegis of the Department of Defence R&D with mandate to Design and Develop Tejas-LCA and its Variants. In present war scenario, there is a continuous need of upgrading the weapons and sensors suite of the aircraft and towards this, ADA has initiated the know-how transfer for integration of weapons and sensors to SDI. This will facilitate the IAF to independently carry out sensors, weapon integration and flight testing to enhance the operational capability of Tejas-LCA fighter. ADA has successfully developed and type certified Tejas LCA with a credit of more than 10000 sorties of incident free flying. IAF has already formed two squadrons of this fighter aircraft and twin seater aircraft are also being inducted.

Source: <https://pib.gov.in/PressReleasePage.aspx?PRID=2007797>

Indian space sector to be turned into a business activity: ISRO chairman

The Indian space sector is changing from a 'closed' and 'secretive' society to an open one and the objective behind it is to turn it into an economic or business activity instead of government programme, ISRO Chairman S Somanath said. The change in mindset has been influenced by how space-related activities in countries like the USA have been turned into an economic activity, Somanath said while speaking at the Mathrubhumi International Festival of Letters (MBIFL) 2024 being held at Kanakakunnu Palace here. The ISRO Chairman said that in the past 60 years, the work of the space sector — from making rockets to satellites — was aimed at societal application, for delivering services that benefit the common man. As a result, the budget of the space programme was 'very less' — Rs 10,000 crore, he said during a session of the fifth edition of the MBIFL. So, with an aim to increase that by 10 times, it was decided to bring some changes to the space policy of the country, he added. The changes would include delegating to the private sector the manufacture of rockets and satellites, research activity being done by the Indian Space Research Organisation (ISRO) and increasing scientific missions like Chandrayaan, Aditya L1 and Gaganyaan, he said.

Source: <https://www.deccanherald.com/india/indian-space-sector-to-be-turned-into-a-business-activity-isro-chairman-2889553>

AWARD

ISRO Chairman S. Somanath Honored with K.P.P. Nambiar Award



The Institute of Electrical and Electronic Engineers (IEEE) Kerala section recognized the achievements of ISRO Chairman S. Somanath by presenting him with the prestigious 2024 K.P.P. Nambiar Award. This award, named after the founder of the IEEE Kerala section, honors individuals who have made significant contributions to advancing technology for humanity. Somanath's leadership in ISRO's lunar exploration program, Chandrayaan-3, and his involvement in various Vikram Sarabhai Space Centre (VSSC) and ISRO missions were highlighted as key reasons for his selection. His dedication and expertise have played a crucial role in propelling India's space endeavors to new heights. This recognition not only celebrates Somanath's personal achievements but also serves as a testament to the remarkable progress made by the Indian space program under his guidance.

ADVERTISEMENTS

E-news is bringing out an exclusive slot for individuals to advertise for career opportunities. Industries and Institutions can promote advertise at very nominal charges product ranges as well as airline operators to present route and tariff