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DRDO & NAVY CONDUCT MAIDEN FLIGHT-TEST OF NAVAL ANTI-SHIP MISSILE

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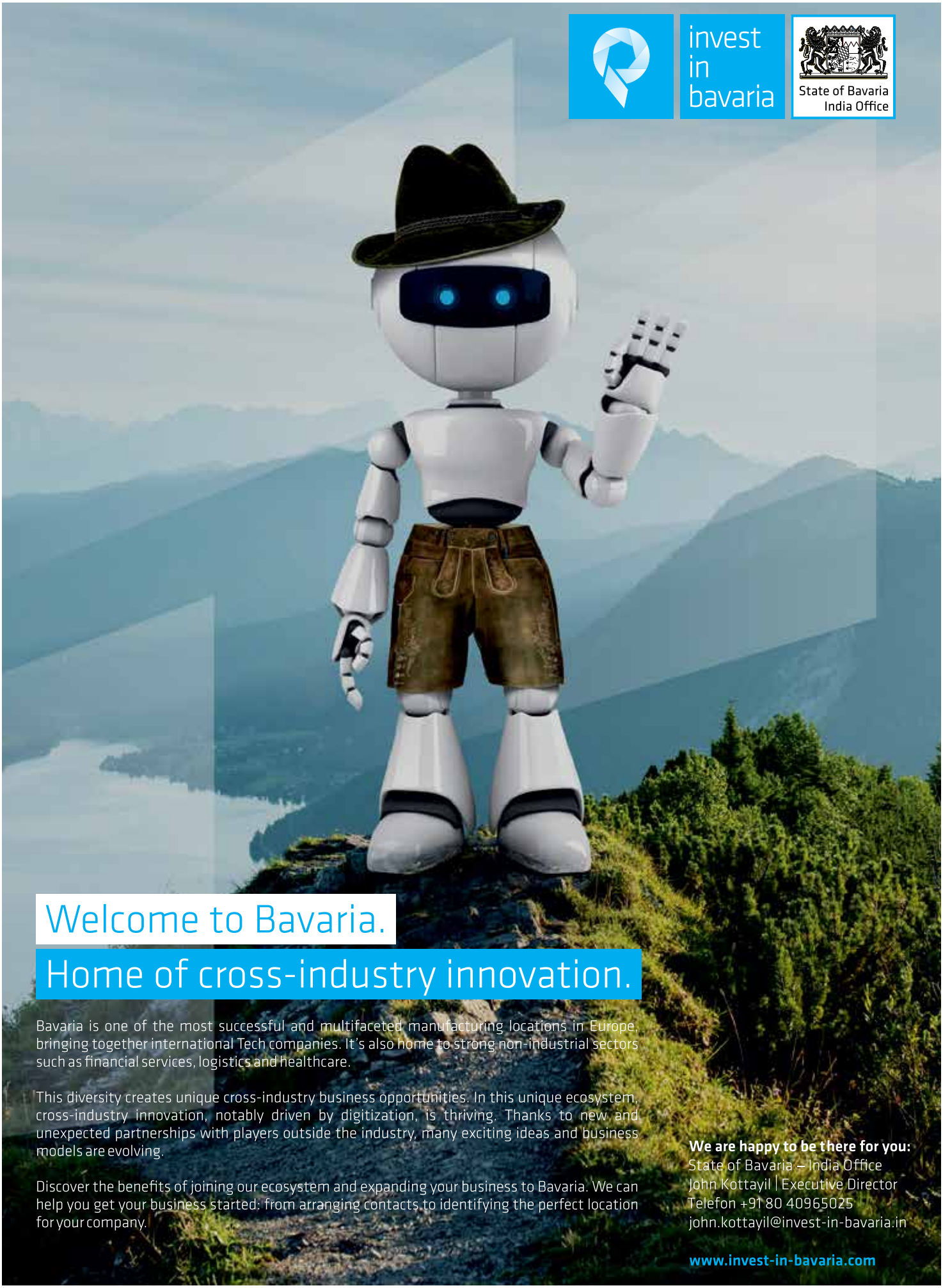
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- Aerospace and defence Industries
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- Representatives of State Governments
- Armed Forces Personnel
- DRDO Officials
- DPSU Officials
- Technical Experts and Analysts
- OEMs
- Defence Contractors and Traders
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- Advanced Manufacturing Technologies
- Public - Private - Partnership for Aerospace & Defence Indigenization
- Indian Space Programmes – Opportunity for the Indian Industry
- DRDO's initiatives for partnership & successful collaborations with private Industry
- Technology Innovations in Aerospace Manufacturing
- High Productive Machines
- Additive Manufacturing
- Industry partnership – Army Design Bureau
- Current and Future Needs of Navy
- Partnering with Design and Development projects of IAF
- Software Applications for Aerospace Manufacturing and Maintenance
- Govt. regulation with respect to outsourcing to SMEs and Complaints
- Growing Excellence in technology and facilities in Private sector

AEROSPACE & DEFENCE MANUFACTURING SHOW ADMS

ADMS 6th EDITION – EXHIBITORS

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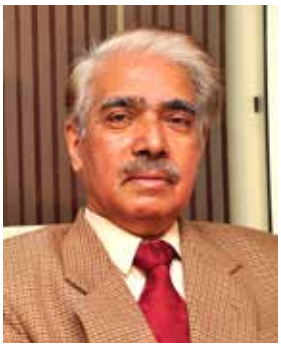
EDITORIAL



ADMS Resonates with India's Clarion Call for Indigenous Manufacture of Defence Equipments

The Government of India has been exhorting greater participation of private sector industries in the indigenous manufacture of defence and aerospace equipments to bring down the imports and to fulfil the national mission of Atmanirbhar Bharat. With the governments proactive policies, make in India and strategic alliance with foreign OEMs, there are greater opportunities for Indian and foreign defence companies. Aerospace and Defence start-ups and MSMEs have a crucial role to play by enhancing their supply chain partnership through R&D and Innovation and building up manufacturing capabilities. Greater synergy between them and defense PSUs and private sector corporates is a key factor for success.

Aerospace and Defence Manufacturing Show (ADMS) organised by Aeromag Asia in association with SIATI has always shared the government's vision of transforming India into a defence manufacturing hub. The seventh edition of ADMS is set to showcase the strategic manufacturing capability and latest technologies of Indian companies. With the Indian government having set an ambitious annual arms export target of around Rs.36,500 crore by 2025, the defence companies in the country have a prospective future ahead. ADMS provides a cost effective platform for competent companies to display their products and capabilities before the right audience. The latest edition will offer a platform to create new business opportunities, identify potential players in the private sector, especially Indian MSMEs and start-ups, and build a strong supplier base to cater to the indigenisation needs.

Keeping in line with DAP2020 and MoDs vision for enhancing indigenous design development & manufacture, acquiring critical technologies if so required, the seminar during ADMS 2022 will have presentations from experts on the maturity level of design enabling and manufacturing technologies in the Indian industries and strategies for R&D and indigenous development of critical technologies or acquiring the same through strategic alliance/outright purchase. Special session on energising the SME supply chain will cover technology and capability enhancement for indigenous development and manufacture of currently imported electrical, electronic and electro-optic components or make these in India through strategic collaborations with foreign OEM component manufacturers.

Aeromag invites the Indian Aerospace and Defence Industry to converge at Bengaluru during 28th and 29th of July to be part of ADMS and showcase your products, technologies and capabilities and interact with industry leaders, decision makers and DPSUs.

Dr C G Krishnadas Nair
Honorary President, SIATI

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Content

UAVs: India aims big

'Drone Rules 2021' announced by India aim to ease the process of using unmanned aerial vehicles (UAVs) in India for various purposes, including civilian requirements. Meanwhile, the nation has been laying much emphasis on defence-related drones. In fact, the goal is to make India a global drone hub by 2030.

India has set high hopes on unmanned aerial vehicles (UAVs). In order to achieve its goals, the Government of India announced the 'Drone Rules 2021' in August last year. The rules aim to make India a global drone hub by 2030.

Moreover, the country is poised to become the world's third-largest UAV market by 2025. Drone Rules 2021 replaced the Unmanned Aircraft System Rules 2021 notified by the Ministry of Civil Aviation earlier in the year. The new drone rules aim to ease the process of using drones in India for various purposes, including non-commercial requirements.

"The new Drone Rules will tremendously help start-ups and our youth working in this sector. It will open up new possibilities

for innovation & business. It will help leverage India's strengths in innovation, technology & engineering to make India a drone hub," Prime Minister Narendra Modi said in a tweet.

The Indian Government also announced a new programme, 'Drone Shakti', in Budget 2022. Finance Minister Nirmala Sitharaman said that the initiative will help establish drones as a service.

Meanwhile, India is engaged in a pilot project to utilize UAVs to assess alternative logistics routes in providing safe, accurate and reliable pickup/delivery of health care items in remote areas. Similar permission was granted to deploy drones for agricultural research activities. Kisan Drones are being used for crop assessments, land records and spraying of insecticides and nutrients.

Another application of UAVs is SVAMITVA (Survey of villages and mapping with improvised technology in village areas) scheme of mapping out the areas to get residents their property cards. A drone-based surveillance system is also deployed for Railway Security.

New rules in place

Under the new rules, security clearance is not needed to operate and fly tiny drones. In addition, the government is planning to create drone corridors to facilitate delivery by cargo UAVs. As per the latest rules, there will be no government intrusion into the use of drones for legal purposes. Subsequently, the Indian government is hoping to trigger growth of UAV usage in multiple industries.

Earlier, the government had made a series of approvals, including a unique authorisation number and a unique prototype identification number, mandatory to use UAVs in the country. According to the latest rules, none of the approvals are required.

The new rules are set to transform core sectors of the economy including logistics, agriculture, mining, infrastructure, surveillance, emergency response, transportation, geo-spatial mapping, defence, and law enforcement.

In India, government-controlled institutions such as HAL, DRDO and CSIR have been involved in the development and manufacture of UAVs. In addition, several private firms are engaged in these tasks. Indian companies have also partnered with foreign firms for creating UAVs for military as well as civilian purposes.

Private firms, startups

The following are some of the major

private firms in the UAV sector in India:

Zen Technologies Ltd. was incorporated back in 1993 and works on heavy-lift logistics drones and an Anti-Drone System. It is headquartered in Hyderabad with offices in India and USA. The company designs, develops and manufactures state-of-the-art combat training solutions for the training of defence and security forces worldwide.

Zen's Anti-Drone System can detect drones, carry out classification and tracking of passive surveillance, camera sensors and neutralize the threat through jamming the drone communication. Zen has received orders from the Indian Air Force (IAF) worth Rs 1.6 billion for supply of Counter-Unmanned Aircraft Systems (CUAS).

Info Edge India, the parent company of startups such as Naukri, 99Acres, Jeevan Sathi and Shiksha.com, has invested in Bengaluru-based Skylark Drones. In 2021, Skylark Drones raised about USD 3 million in a funding led by Info Edge ventures and Indian Angel Network fund.

Meanwhile, DCM Shriram Industries

announced a 30 per cent stake in a Turkish drone maker Zyrone Dynamics, following which the UAV producer has received investment worth USD one million from India. Both firms announced that they would create drones for civilian use, especially cargo transportation and sell the products in around the world.

Another Indian UAV firm is RattanIndia Enterprises, which has made a strategic investment in US-based Matternet, the world's most extensive urban drone logistics platform. It also announced the launch of an Indian subsidiary to start the UAV business in India.

Some startups are also engaged in designing and developing UAVs for various needs. They include EyeROV, which is currently developing India's first commercial underwater drone for remote inspection of offshore assets. The Indian Oil Corporation (IOC) has announced that it would be deploying underwater drones to monitor its vast network of pipelines across the country to thwart attempts to steal fuel.

Similarly, Iowa and Chennai-based Vinveli is building indigenous drones for Special Forces under the Ministry of Home Affairs. ideaForge is a drone startup which claims to have over 90% of the market share in the security and surveillance segment. .

Defence purposes

The Indian Army initially acquired UAVs from Israel in the 1990s and the Indian Air Force and Navy followed suit. India first used military drones during the 1999 Kargil war against Pakistan for photo reconnaissance along the Line of Control.

Incidentally, the Drone Rules 2021 do not apply to drones used by the Indian Army, IAF or Indian Navy. Currently, India is arming the Indian Army, IAF and Indian Navy with UAVs which would enable them to play a critical role in future wars. These UAVs are not only meant for long range surveillance but also for carrying out precision strikes.

Among the several drone programmes that the defence forces are pursuing is Project Cheetah, which aims to upgrade and arm India's Heron drones, with the assistance of Israel, the manufacturer. Developed by the Israel Aerospace Industries (IAI), the Heron is a Medium Altitude Long Endurance (MALE) UAV. In all, there are about 90 Herons in service with the country. Following tensions at the Line of Actual Control (LAC) with China since May 2021, the Army ordered on lease the latest generation of Herons, known as the Heron II. Another Indian UAV defence programme is the procurement of 30 MQ-9 Reaper or Predator B drones, which will be a tri-service initiative.

At the same time, the Searcher – also developed by IAI – was first deployed in 1992, but it was the Searcher Mk II, introduced in 1998, that India procured after 2000.

Meanwhile, Navi Mumbai-based firm ideaForge Technology developed the SWITCH UAV, which is termed as a 'first of its kind' Vertical Take-Off and Landing (VTOL) aircraft and fixed wing hybrid UAV. Subsequently, the Army awarded a US Dollars 20 million contract to ideaForge, for an advanced version of SWITCH tactical drones.

The infantry battalions of the Army use multiple varieties of quadcopters, which are UAVs manufactured by the DRDO and also by private firms. These drones are used for tactical surveillance by soldiers during anti-terrorism operations and patrolling for deeper situation awareness.

The IAF also uses two versions of kamikaze drones — Harpy and the upgraded Harops — both procured from Israel. Harpy is an all-weather day/night 'Fire and Forget' autonomous weapon system that is used to disable enemy radars.

Navy gears up to commission IAC Vikrant in August

The commissioning of the vessel will coincide the 75th anniversary of Indian independence

The Indian Navy's first Indigenous Aircraft Carrier (IAC -1) is awaiting its final sea trials before being handed over to the Navy for its commissioning. IAC will be commissioned into the Navy in August in connection with Azadi Ka Amrit Mahotsav, the commemoration of 75th anniversary of India's independence. Though a final date is yet to be announced, Cochin Shipyard Limited (CSL), which built the vessel, will hand over the carrier to the Navy in June. India's Long Term Perspective Plan envisages at least two operational aircraft carriers at any one time with the third one on standby to substitute during maintenance of either. With the delivery of IAC, India would join a select group of nations with the capability to indigenously design and build an Aircraft Carrier, which will be a real testimony to the Atmanirbharata in Defence.

Maritime supremacy has always been an indispensable element for all major powers in the world and India is no different. Sea power makes it possible to endure engagement in troublesome theatres, sustain alliances, and maintain Freedom of Navigation and maritime trade. In 1980, when India launched the guided-class frigate INS Godavari (F20), the first Indian warship to be indigenously designed and built, many were astounded to see a 'big defence vessel' even though its tonnage was only nearly 4000. Forty two years down the line, when tonnage is still a measurement of a ship's size, we now have 40000-tonne vessel, the country's first indigenously designed and built Aircraft Carrier, which has nearly 10 times larger displacement than INS Godavari.

IAC, which will be rechristened as INS Vikrant, is all set to complete its final sea trials, post which it will be commissioned into the Indian Navy at a grand ceremony to be held in Kochi, where it is being constructed. Though Cochin Shipyard Limited (CSL), is yet to announce the date of commissioning, it is confirmed that it will be in August in connection with the 75th Anniversary of Indian Independence (Azadi Ka Amrit Mahotsav).

The vessel is of paramount importance for India especially when the Chinese Navy has growing presence in Indian Ocean Region (IOR) and improved ties with

Pakistan. Moreover, India has a decisive role in securing the seas and shipping lanes of the Indo-Pacific, ensuring peace, providing security to the region, and in case of a war, unleashing lethal firepower. An aircraft carrier, a fathomable symbol of maritime superiority, is the most valuable sea-based military asset and offers an incomparable military instrument with its ability to project tactical air power over long distances, including Air Interdiction, Anti-Surface Warfare (ASuW), offensive and defensive Counter-Air, AEA and AEW.

A Floating Township

IAC is a floating military base and it is a moving township and the ship could generate the power needed for half of Kochi city a day. The 21000 tonnes of steel used in the ship is enough to build three Eifel towers. It has 14 decks with 2300 compartments designed for a crew of around 1700 people. The vessel has gender-sensitive accommodation spaces for women officers. Its kitchen has all machines including one that could make 1000 chapathis per hour. The medical unit has an ICU, X-Ray and CT scan machines.

The vessel, designed by Indian Navy's Directorate of Naval Design (DND), is 262 metres (860 ft) long and 60 metres (200 ft) wide, and displaces about 40,000 metric tons. It has a height of 59 m including the superstructure. The ship with high degree of automation for machinery operation, ship navigation and survivability, has been designed to accommodate an assortment of fixed wing and rotary aircraft.

The vessel has five passenger lifts and two aircraft lifts, used to transport assets between deck and hangar. The hangar has two 360 degree rotatable turntables to help with the parking of aircrafts, both choppers and fighter jets. The hangar deck of IAC, which has the size of two football fields combined, reasserts the size and it can accommodate 20 fighter jets. The huge flight deck, which as the

size of two football grounds, features a runway, parking bay and a Short Take-Off, Barrier Arrested Recovery (STOBAR) configuration with a ski-jump.

The flight deck can house 10 aircraft. The deck is designed to enable aircraft such as the MiG-29K to operate from the carrier. It is expected to carry an air group of up to thirty aircraft, which will include up to 26 fixed-wing combat aircraft, primarily the Mikoyan MiG-29K, besides carrying 10 Kamov Ka-31 or Westland Sea King helicopters. While Ka-31 fulfills the airborne early warning (AEW) role and the Sea King will provide anti-submarine warfare (ASW) capability.

Symbol of Atmanirbharata in Defence

The IAC, which is termed as the 'Shining Example of Atmanibhar Bharat', boasts of nearly 75% indigenous content, from design, to steel used in construction, to key weapons and sensors. The Defence Acquisition Council has also accorded approval for RFP of Project 75-I under the Strategic Partnership model, which will give further fillip to indigenous development of niche manufacturing technologies. The combat capability, reach and versatility of the aircraft carrier, will add formidable capabilities in the defence of the country and help secure India's interests in maritime domain.

Preparations not a provocation, but a guarantee for peace in Indian Ocean region: Defence Minister

Defence Minister Rajnath Singh announced that the preparations being made by the Indian Navy are not a provocation to any aggression, but a guarantee of peace and security in the Indian Ocean region. He was speaking after a sea sortie on one of the most potent platforms of Indian Navy 'INS Khanderi' during his visit to Karwar Naval Base in Karnataka.

The minister was given first-hand insight into the combat capabilities and offensive strength of the state-of-the-art Kalvari class submarine. For over four hours, the full spectrum of capabilities of underwater operations of the stealth submarine was demonstrated to Rajnath Singh.

The minister witnessed a wide range of operational drills with the submarine demonstrating the advanced sensor suite, combat system and weapon capability which provides it a distinct advantage in the subsurface domain. The day-at-sea also provided him a glimpse of the submarine's capability to effectively counter anti-submarine operations by an adversary. Chief of Naval Staff Admiral R Hari Kumar and other senior officials of the Indian Navy and Ministry of Defence were also present.

The Defence Minister complimented the crew of the submarine for carrying out operations in a challenging environment and the Indian Navy for maintaining a high state of readiness and offensive capability to address any threat in the maritime domain. Interacting with media persons after the sea sortie, Rajnath Singh termed the Indian Navy as a modern, potent and credible force, capable of being vigilant, valiant and victorious in all situations. "Today, the Indian Navy is counted among the frontline navies of the world. Today,

the world's largest maritime forces are ready to work and cooperate with India," he said.

The Minister described 'INS Khanderi' as a shining example of the 'Make in India' capabilities of the country. He appreciated the fact that 39 of the 41 ships/submarines ordered by the Indian Navy are being built in Indian shipyards. The number of platforms and the speed at which they have been launched by the Indian Navy has strengthened the resolve of achieving 'Aatmanirbhar Bharat' as envisioned by Prime Minister Narendra Modi.

On the commissioning of India's first indigenous aircraft carrier 'Vikrant', Rajnath Singh said, it will bolster the maritime security of the country, along with INS Vikramaditya. He, however, assured that the preparations being made by the Indian Navy are not a provocation to any aggression, but a guarantee of peace and security in the Indian Ocean region.

The operational sortie was accompanied by the deployment of ships of the Western Fleet, an anti-submarine mission sortie by a P-8I MPA and Sea King helicopter, a fly past by MiG 29-K fighters and a search & rescue capability demonstration.

With this, the Defence Minister has now witnessed first-hand the three-dimensional combat capability of the Indian Navy, after having embarked INS Vikramaditya in September 2019 and conducted a sortie on the P8I Long Range Maritime Reconnaissance Anti-Submarine Warfare aircraft earlier this month.

The second of the Project 75 submarines was built under the 'Make in India' initiative at Mazagon Docks Limited, Mumbai. INS Khanderi was commissioned in 2019.

The Scorpene submarines are extremely potent platforms. They have advanced stealth features and are equipped with both long-range guided torpedoes as well as anti-ship missiles. These submarines have a state-of-the-art SONAR and sensor suite permitting outstanding operational capabilities.

Presently, Indian Navy operates four submarines of this class with two more likely to be inducted by end next year. The induction of these submarines has significantly enhanced the Indian Navy's underwater capability in the Indian Ocean Region.

HAL-AASSC Hold Skill Conclave

R. Madhavan, CMD, HAL presenting memento to Dr K. Sivan, former Chairman ISRO at the HAL-AASSC Skill Conclave.

HAL and Aerospace and Aviation Sector Skill Council (AASSC) held a Skill Conclave at HAL Management Academy . The significant feature of the conclave was a panel discussion on various topics such as how India can be a global skills hub in aerospace technology, post Covid rebound in Indian aviation and carving skills for future, talent resource challenges in drone technology and bridging gap through skill India.

Dr K. Sivan, former Chairman ISRO while presenting skill awards to various Divisions of HAL called upon HAL and AASSC to venture into new areas, apart from Aerospace as upgradation of skills is needed to achieve indigenisation goals in different sectors in India.

"HAL covers nearly 16,000 employees with its well laid out and effective skill development programs which are necessary to lead the complex aerospace industry", said R. Madhavan, CMD, HAL. "The company is playing a critical role in the Skill India mission. Our skill development policy lays emphasis on a variety of programs that include continuous learning and development. Our Training within Industry (TWI) program has about 500 projects incorporating critical skilling aspects", said Alok Verma, Director, HR, HAL.

The highlight of the conclave was display of aerospace components manufactured by apprentices.

HAL Commences Main Airframe Fatigue Test of LCA Mk1

HAL has commenced the Main Airframe Fatigue Test (MAFT) of LCA Mk1 airframe at its Ground Test Centre of the Aircraft Research and Design Centre (ARDC) in Bengaluru.

The MAFT test facility was inaugurated by Arup Chatterjee, Dir (Engg. and R&D), HAL. "Despite the setbacks due to COVID-19 pandemic, HAL has been able to commence the MAFT testing within the timelines planned", says Chatterjee. Dr. Girish Dheodhare, PGD (CA) & DG-ADA, Air Vice Marshal K V R Raju, Director IAF-PMT, Dr A.K. Bakare, Scientist 'G', Director (Aircraft), CEMILAC officials from HAL, ADA, CEMILAC and ORDAQA were present.

R Madhavan, CMD, HAL and Dr. Dheodhare expressed their satisfaction on timely commencement of the MAFT testing. AVM Raju cited the importance of the commencement of the MAFT testing towards clearance of the full life of LCA fleet and urged the team to keep up the momentum to ensure that the continuous flying requirements of IAF are met.

As per the military airworthiness requirements, MAFT has to demonstrate the capability of the airframe to withstand four times the service life. These tests will be carried out on the LCA (Air Force) Mk1 airframe over a period of eight to nine years. The successful completion of MAFT will qualify the LCA (Air Force) Mk1 airframe for its full-service life.

The test plan and schedule for the MAFT has been jointly arrived at by the designers from HAL and scientists from Aeronautical Development Agency (ADA) in coordination with the Regional Centre for Military Airworthiness (RCMA), CEMILAC. The testing and inspection will be carried out by ARDC under the supervision of DGAQA with the participation of designers from ARDC and ADA.

Liebherr and HAL sign MOU

Hindustan Aeronautics Limited (HAL) and Liebherr signed a Memorandum of Understanding that lays the basis for future strategic cooperations in the field of on-board systems for HAL's current and future aircraft programs.

Arup Chatterjee, Board Member and Director Engineering and R&D of HAL, and Nicolas Bonleux, Managing Director and Chief Commercial Officer of Liebherr-Aerospace & Transportation SAS, shake hands after the signature of the MoU.

Within the frame of the agreement, Indian aircraft manufacturer HAL and OEM Liebherr-Aerospace will cooperate to identify and define the best solutions for HAL's fixed-wing and rotary-wing aircraft in landing gears, actuation, air management, and power conversion systems.

This Memorandum of Understanding is a great additional step in the collaboration between HAL and Liebherr that dates back several decades. Together with the strengthening of Liebherr-Aerospace's presence in India, the signature of the contract will enable the acceleration of additional joint projects between HAL and Liebherr.

Pinaka Mk-I (Enhanced) Rocket System and Pinaka ADM successfully flight-tested

Pinaka Mk-I (Enhanced) Rocket System (EPRS) and Pinaka Area Denial Munition (ADM) rocket systems have been successfully flight-tested by Defence Research and Development Organisation (DRDO) and Indian Army at Pokhran Firing Ranges. A total of 24 EPRS rockets were fired for different ranges. Required accuracy and consistency was achieved by the rockets meeting all trial objectives satisfactorily. With these trails, the initial phase of technology absorption of EPRS by the industry has successfully been completed and the industry partners are ready for user trials/series production of the rocket system.

The Pinaka rocket system has been developed by Armament Research and Development Establishment, Pune supported by High Energy Materials Research Laboratory, another Pune-based laboratory of DRDO.

The EPRS is the upgraded version of Pinaka variant which has been in service with the Indian Army for the last decade. The system has been upgraded with advanced technologies enhancing the range to meet the emerging requirements. After establishing the performance efficacy of the enhanced range version of Pinaka, the technology was transferred to the industries viz. Munitions India Limited (MIL) and Economic Explosives Limited Nagpur. Rockets manufactured by MIL under Transfer of Technology from DRDO were flight tested during this campaign. Different variants of munitions and fuzes which can be used in the Pinaka rocket system were also successfully test evaluated in the Pokhran Field Firing Range.

Secretary Department of Defence R&D and Chairman DRDO Dr G Satheesh Reddy has congratulated the teams for completing the flight trials of new design rockets based on advanced technologies in record time.

Successful high-altitude flight-test of Anti-Tank Guided Missile 'HELINA'

As part of the ongoing user validation trials, indigenously-developed Anti-Tank Guided Missile 'HELINA' was again successfully flight-tested from Advanced Light Helicopter on April 12, 2022. Teams of Indian Air Force and Indian Army, along with Defence Research and Development Organisation (DRDO), conducted the trial at the high-altitude range. This is the second successful flight-test in successive days. The second trial was carried out for different range and altitude. As per the plan, the missile engaged the simulated tank target accurately. The trials were witnessed by senior Army Commanders and scientists of DRDO. With the flight-test, consistent performance of the complete system, including Imaging Infra-Red Seeker, has been established, which will enable the induction of the 'Helina' into the Armed Forces. Earlier, validation trials of the 'Helina' were conducted at Pokhran in Rajasthan, which proved the efficacy of the missile in desert ranges.

'Helina' is the third generation, fire and forget Anti-Tank Guided Missile that can engage targets both in direct hit mode as well as top attack mode. The system has all-weather day and night capability and can defeat battle tanks with conventional armour as well as with explosive reactive armour.

HAL Hands Over Gaganyaan Hardware to ISRO

HAL has and will continue to play a significant role in India's current and future space program including the Gaganyaan manned mission to space, given the skills and knowledge base within the company said S. Somanath, Chairman ISRO. He identified indigenisation and cost reduction as major challenges in the space missions and said apart from HAL private players will have a role in achieving these goals.

He was speaking at the handing over function of the First set of Gaganyaan Hardware by HAL to ISRO and at the inauguration of HAL's PS2/GS2 stage integration facility here today. HAL also handed over 150th Make Satellite Bust Shelter on this occasion.

R Madhavan, CMD, HAL recalled HAL's long association with ISRO for over 40 years, and said HAL is well poised to play a bigger role in the integration activities related to the launch vehicles. "We will continue to be a reliable partner of ISRO with dedication, devotion and zeal", he added.

The PS2 stage is the second stage of PSLV launch vehicle in which earth storable propellants are used for propulsion.

HAL also handed over 150th Make Satellite Bus Structure on this occasion.

BEL Records Increased Turnover in 2021-22

Despite the challenges posed by the pandemic, Bharat Electronics Limited (BEL), one of the prime defence PSUs in the country, is marching ahead registering significant growth in its business. BEL recorded an increased turnover of Rs 15,044 crore in 2021-22 compared to Rs 13,818 crore in 2020-21 registering a growth of 8.87 per cent. Even though the company expected a growth of 10-15 percent, the logistics was affected due to a global chip shortage, a pandemic and the geo-political situation.

Addressing the media, Anandi Ramalingam, Chairman and Managing Director, BEL, said that the company's turnover from indigenous technology was 78 percent and the order book of the company as on April 1, 2022, was around Rs 57,570 crore. Notably, the expenditure on research and development (R&D) has been increased from Rs 873 crore in 2020-21 to Rs 1,045 crore in 2021-22.

"BEL achieved a market capitalisation of Rs 60,000 crore. It is significant to state that the BEL's turnover from indigenous technology is 78 per cent. The sales from defence business is 88 percent," Ramalingam said.

She said that BEL has diversified into a non-defence business which includes rail and medical electronics. "Currently, 88% of our business is in the defence sector, and ideally, we should reach a mix of 80:20. In 2021, the indigenously-developed first prototype of the Universal Driver Training Simulator for Rolling Stock (i-UDTS) was inaugurated by the Delhi Metro Rail Corporation (DMRC) and BEL. Prior to this, driver training simulators were being imported by DMRC from a foreign OEM," she said.

She added that the future thrust areas of BEL are Quantum Cryptography, high power lasers, drone guard systems, AI-based products, unmanned systems, geospatial analytics, intelligent process automation etc. The company signed MoUs with the tri services (Indian Army, Indian Navy and Indian Air Force) towards technology cooperation and innovation. "We have signed licenses for transfer of technology (LA ToT) with the Defence Research Development Organisation (DRDO) in the areas of radars, electronic warfare systems, and robotics and weapon systems." she said.

Airbus Defence and Space has signed an export contract worth $ 93.15 million with BEL for the manufacture and supply of Radar Warning Receiver (RWR) and Missile Approach Warning System (MAWS) under the C295 aircraft programme. BEL received an order worth Rs 2,400 crore from Hindustan Aeronautics Limited (HAL) for the manufacture and supply of 20 types of airborne electronic systems to be fitted on the LCA.

Other flagship projects executed during FY 2021-22 were Missile Systems (Air Defence Weapon System & LRSAM), Command & Control Systems, Communication and Encryption products, various Sonars, Electro-optic Systems, Fire Control Systems, Gun Upgrades, various Radars, Electronic Warfare Systems, Coastal Surveillance System, Unmanned Systems, HomeLand Security Systems, Smart City projects, K-FON, Medical Electronics, etc. BEL also received orders for the Electronic Voting Machine (EVM), weapon locating radar, gun electronic upgrade, advanced electronic warfare range etc.

Rostec to start serial production of Checkmate fighters in 2027

Russia to start serial production of the fifth-generation light fighter Checkmate in 2027, Rostec CEO Sergei Chemezov said at a meeting with President Vladimir Putin.

Work is in progress on the designer documentation for the light fighter jet Checkmate, Sergey Chemezov said.

So far, a prototype has been created and designer documentation is being developed.

"We borrowed the onboard equipment and the engine from the fifth-generation fighter Sukhoi-57, but reconfigured them somewhat," Chemezov said, adding that Rostec was creating the plane on its own money without drawing budget funds. He hopes that the Defense Ministry will agree to purchase the plane.

BEL pays Rs. 186 Cr. Interim Dividend

Anandi Ramalingam, Chairman & Managing Director, BEL, along with M V Raja Sekhar, Director (R&D), BEL, and Manoj Kumar, Executive Director (National Marketing), BEL, presenting the second Interim Dividend cheque for Rs. 186.89 Cr. to the Defence Minister, Rajnath Singh.(Left to Right) Anurag Bajpai, Joint Secretary (P&C), Dr Ajay Kumar, Defence Secretary, and Sanjay Jaju, Additional Secretary (DP) also seen.

Bharat Electronics Ltd (BEL), a Navratna Defence PSU, has paid Interim Dividend of 150% on its paid-up capital to the Government of India for the Financial Year 2021-22.

Anandi Ramalingam, Chairman & Managing Director, BEL, presented the second Interim Dividend cheque of Rs. 186,89,60,967/-, payable on the shares held by the President of India, to the Defence Minister, Rajnath Singh, at New Delhi on March 31. BEL has declared 150% percent as Second Interim Dividend (Rs. 1.50/- per share) to its shareholders for the financial year 2021-22. This is the 19th consecutive year that BEL is paying Interim Dividend. BEL has paid a total dividend of 400% on its paid-up capital for the financial year 2020-21.

Aircraft Indigenisation Review Meeting (AIRM) 01/2022

Aircraft Indigenisation Review Meeting (AIRM) is conducted twice a year to monitor progress of indigenisation in Naval Aviation and address roadblocks, if any. The meeting is chaired by ACNS (Air Materiel) and is attended by all stakeholders like heads of 04 In-house Indigenisation Committees (IICs), Oi/Cs of Naval Liaison Cells (operating as 'Indigenisation Cells'), NAQAS, MOs and Staff Officers from IHQ MoD (N) & HQNA.

AIRM 01/22 was held at NAY (Goa) on 06 and 07 Apr 22. Several key issues directly affecting the indigenisation efforts were deliberated during the course of the meeting. In addition, interaction with Academia was held on 07 Apr 22 on the side lines of the AIRM to work out modalities for joint partnership in the indigenisation efforts. The interaction provided a platform for future engagements. Head of Aerospace Departments of IIT Bombay and Madras, KIIT Bhubaneshwar were present for the interaction.

Besides, on 08 Apr 22, with an aim to mitigate obsolescence issues and reduce dependence on foreign OEMs, a vendor interaction was held with representatives of companies.

During the interaction, the vendors were briefed about IN's intent of attempting in house repairs of High failure High Cost items by formulating a repair procedure by reverse engineering using provisions of NSP-2021,Schedule 13, Minor Head 110(P) &(Q).The procedure for progressing such cases was explained to the vendors and the vendor response was encouraging.

IAI Supplied Air Defense & Surveillance Radar to the Czech Republic

Israel Aerospace Industries (IAI) has supplied the Czech Republic, via its Czech partners RETIA and VTU, with the first air defense Multi-Mission Radar (MMR), as part of a deal signed in December 2019 by the Ministries of Defense of both the Czech Republic and Israel. The radar, which is operational and combat-proven in Israel, provides both surveillance and defense capabilities to customers around the world, and is integrative with NATO systems. The radar detects and classifies threats, and supplies weapons systems with the data necessary to neutralize a number of those threats simultaneously. Thanks to the system's advanced tracking capabilities, the radar provides situational awareness which is both precise and reliable, and includes the detection and identification of targets having low signatures.

The MMR can deal simultaneously with multiple missions – including air defense against aircraft, UAVs and drones, artillery against varied enemy targets, and the identification and location of rocket launches, enemy artillery, and mortars, while locating both the launch and expected hit position, and controlling intercepting missiles launched against these threats. The MMR is the 'brain' of Israel's Barak MX Air and Missile Defense System, the Iron Dome, and David's Sling, and to date over 150 such systems have been sold to customers around the world.

Yoav Tourgeman, IAI VP and ELTA CEO, said: "Working together with our local Czech partners, IAI is proud to supply the Czech Ministry of Defense with these advanced radar systems on time and according to the project schedule. Despite the challenges of the last two years during the COVID-19 pandemic, the project teams, in both Israel and the Czech Republic, were able to cooperate successfully while remaining committed to the aim of joint production.

The advanced radar that has now been supplied to the Czech Republic is able to simultaneously identify and classify hundreds of targets, perform identification of unmanned platforms, missiles, rockets and other new threats in the operational area. We believe that the system's ability to integrate with NATO systems will bring about a new era of operations for the Czech Ministry of Defense." ■

Sukhoi Patents Checkmate's Unique Aerodynamic Design

Sukhoi (part of Rostec State Corporation's United Aircraft Corporation) has patented a new light single-engine aircraft code-named Checkmate.

The patent confirms that the Russian-design aircraft is superior to known foreign analogues in terms of both flight and field performance.

In addition, Russian designers have improved the Checkmate's stability and control while maintaining its high aerodynamic performance and stealth characteristics.

The new patent also states that the Checkmate's engine can be fitted with a thrust vectoring nozzle moving in the vertical plane that is aligned with the aircraft body axis and is used for flight control and trimming.

A prototype of the fifth-generation Checkmate fighter jet was first unveiled at the MAKS-2021 air show.

■

First Made in India Dornier Aircraft Flight Flagged Off

The Minister of Civil Aviation Jyotiraditya M. Scindia and the Chief Minister of Arunachal Pradesh Pema Khandu flagged off the first flight of Made in India HAL Dornier Do-228 in a bid to connect airports and Advanced Landing Grounds (ALGs) of Northeast India. The flight will be operational from Dibrugarh in Assam to Pasighat in Arunachal Pradesh and finally to Lilabari in Assam.

Alliance Air, a public sector airline company, had signed a Memorandum of Understanding (MoU) with Hindustan Aeronautics Limited (HAL), a Central Public Sector Unit under Ministry of Defence to operate Indian made Dornier aircraft, which is called Hindustan aircraft. This initiative is in line with the vision of Prime Minister Narendra Modi "AtmaNirbhar Bharat". With this, Alliance Air becomes the first commercial airline to fly Indian made aircraft for civil operations.

Speaking on the occasion, Minister Scindia said, in the last 70 years, 74 airports were developed but in the last 7 years under the visionary leadership of Prime Minister Narendra Modi, we have created 66 new airports taking the total to 140 airports operational in the country.

Elbit Awarded $49 Mn. Contract for Night Vision Systems

Elbit Systems Ltd. announced that its U.S. subsidiary, Elbit Systems of America LLC, was awarded a delivery order valued at $49 million for the supply of Squad Binocular Night Vision Goggle ("SBNVG") systems to the U.S. Marines Corps. The order will be executed in Roanoke, Virginia and will be supplied through September 2023.

This additional order is part of a $249 million five-year Indefinite Delivery Indefinite Quantity (IDIQ) contract from September 6, 2019.

The SBNVG is a lightweight helmet-mounted system that provides superior nighttime viewing in various environments and conditions, improving warfighter situational awareness and performance. The system includes an enhanced battery life and high-performing white phosphor image intensification tubes for improved clarity and depth perception.

Raanan Horowitz, President and CEO of Elbit Systems of America, said: "This recent order for additional Squad Binocular Night Vision Goggles signifies that Elbit Systems of America is a partner of choice by the U.S. Marine Corps. We are honored that Marines are equipped with our night vision solutions and we are committed to continuing to provide our warfighters with the very best technology we have to offer."

Rostec developed Russian-made communication equipment for the MC-21 aircraft

The stealth glass acquires special properties due to thin films of metals and metal oxides, deposited onto its surface by magnetron sputtering in a vacuum machine. The modernization of the unit increased the peak performance of the magnetron more than threefold, allowing for the deposit of films with significantly lower surface resistivity. The engineering and design solution significantly improves the quality of the coating applied to mass production aviation glazing products, so that the cockpit gets improved optical characteristics and low radar visibility. These factors increase the combat potential and survivability of stealth aircraft.

"Today, the samples produced with the upgraded equipment confirmed the pre-calculated characteristics during measurements and tests. The new technology will be used to create structural optics for advanced aviation systems. This will reduce the radar visibility of the aircraft and increase their combat capabilities," said Vladimir Artyakov, First Deputy CEO of Rostec State Corporation.

The Obninsk Research and Production Enterprise "Technologiya" has unique experience in independent development and serial production of structural optics products with applied multifunctional thin-film coatings. Engineering and software solutions implemented by the company's specialists have allowed the metal-optical structures with more than 200 layers, each 0.25-0.3 nm thick.

Indo-French Naval exercise 'Varuna-2022' Culminated

The 20th edition of the Indo-French bilateral Naval exercise 'Varuna-2022' culminated on 3rd April. The eventful tactical sea phase of the exercise laid primary focus on advanced anti-submarine warfare tactics, gunnery shoots, seamanship evolutions, tactical manoeuvres and extensive air operations. The units also undertook cross deck landings by integral helicopters, showcasing a high level of interoperability between them. Gun firing and underway replenishment procedures were also exercised between ships.

The final phase of the exercise progressed with tapered focus on advanced anti-submarine warfare (ASW) exercises. INS Chennai with Sea King Mk 42B, maritime patrol aircraft P8i, French Navy frigate FS Courbet, support vessel FS Loire, and other units exercised on full spectrum of ASW operations.

The last day of the exercise had cross visits of personnel, cross embarkation of sea-riders and a closing session was conducted. Participants and operations teams of Participating units met onboard INS Chennai for a comprehensive debrief.

All evolutions conducted at sea were discussed with options for possible inclusions in the future editions of the exercise. After debrief, culmination of the exercise was marked by the traditional steam past between ships of both navies. INS Chennai passed the column of French warships at close range with personnel biding each other favourable winds and following seas for the journey ahead.

Seamless coordination, precise execution of manoeuvres, and clockwork execution of complex anti-submarine warfare exercises characterized the conduct of Varuna-2022. All operational objectives of the exercise were accomplished by the participants. The exercise reflected high synergy and mutual understanding between the Indian Navy and French Navy that will bolster their ability to undertake joint operations in maritime theatre, when required. Varuna-2022 will go a long way in strengthening the strategic partnership between India and France.

Wingbox of MC-21 aircraft made of Russian composites successfully passes crucial stage of static tests

Irkut Corporation (part of Rostec's UAC) and the Central Aerohydrodynamic Institute (TsAGI) of the "Zhukovsky Institute" National Research Center have successfully completed the crucial stage of static tests for the wingbox of MC-21 aircraft made of Russian composite polymer materials. The test results showed that the actual strength properties of the product matched the calculated values.

Aviation safety standards require that the wingbox has to withstand the design load during static tests. To find out the maximum bearing capacity of the wing, the wingbox was loaded to destruction, according to the plan. The destruction occurred at the TsAGI pavilion and under the load exceeding the calculated value set according to the existing aviation safety rules – 1.5 times higher than the maximum possible load in operation.

The planned destruction of the wingbox occurred in intentionally created specific climate conditions: in order to take into account, the effect of high temperature on the strength capacity of the composite material, part of the wing structure was heated.

"The successful trial confirmed that the methods for calculating the strength capacity of composite products are correct. The experiments prove that the wingbox, the main bearing part of the wing, ensures stability and safety in the most adverse flight conditions. All planes under construction will be equipped with wings made of domestic materials," said Yuri Slyusar, UAC General Director.

"Developing civil aviation requires harmonized cooperation of science and industry. We created an advanced experimental facility at TsAGI and it is run by a team of top professionals. Thus, we can run a great number of trials under the MC-21 innovation program in cooperation with Irkut Corporation staff," said Kirill Sypalo, TsAGI General Director, correspondent member of the Russian Academy of Sciences.

The wingbox is made by JSC AeroKompozit, a subsidiary of Irkut Corporation (part of Rostec's UAC).

The domestic composite materials for the load-bearing wing structure were developed with the participation of scientists from Moscow State University and Rosatom, as well as aviation industry experts. MC-21-300 aircraft with the wing made of Russian composite materials made its maiden flight on December 25, 2021. Prior to the flight, it went through a large set of ground tests showing that domestic composite materials matched the criteria set for aircraft components.

Rostec improves stealth glass technology

The stealth glass acquires special properties due to thin films of metals and metal oxides, deposited onto its surface by magnetron sputtering in a vacuum machine. The modernization of the unit increased the peak performance of the magnetron more than threefold, allowing for the deposit of films with significantly lower surface resistivity. The engineering and design solution significantly improves the quality of the coating applied to mass production aviation glazing products, so that the cockpit gets improved optical characteristics and low radar visibility. These factors increase the combat potential and survivability of stealth aircraft.

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HAL & BEL Sign Contract for Indigenous IRST

HAL and BEL signed a contract for co-development and co-production of Long Range Dual Band Infra-Red Search and Track System (IRST) for Su-30 MKI under the MAKE-II procedure of Defence Acquisition Procedure (DAP) 2020, as part of the 'Make in India' initiative.

The proposed IRST system will be a high end strategic technology product in the field of defence avionics and technically competitive to existing IRST system in the global market with features of Television Day Camera, Infrared & LASER sensors in single window for air to air and air to ground target tracking and localization. The system will enhance the Indian Air Force's air superiority.

Suneel Kumar Srivastava, GM, HAL (Korwa) and Loyola Pedro Vianney G., GM, BEL (Chennai) signed the contract. Arup Chatterjee, Director, Engineering and R&D (HAL) and M V Rajasekhar, Director, R&D (BEL) were present on the occasion.

The joining hands of two defence PSUs for the development of technologically critical IRST gives impetus to "Atmanirbhar Bharat" in the defence sector. This initiative also opens the future path in the field of indigenous defence manufacturing for development of high end strategic technology product of IRST for various platforms in global competitive environment.

Rostec to start serial production of Okhotnik heavy attack drones in 2023

Russia to launch serial production of the Okhotnik (Hunter) heavy strike drone in 2023, said Rostec CEO Sergei Chemezov at a meeting with President Vladimir Putin. The Okhotnik features a flat nozzle thruster that makes it less visible for radars

The serial production of the Okhotnik (Hunter) heavy strike drone will begin in 2023, Head of the state tech corporation Rostec Sergey Chemezov said at a meeting with Russian President Vladimir Putin.

"The first flying prototype was rolled out in 2021 and we will begin serial-producing and delivering it to the Defense Ministry in 2023," Chemezov said.

As its specific feature, the Okhotnik features a flat nozzle thruster that makes it less visible for radars, the Rostec chief stressed. "Also, a new ground control post is being created for the drone," he said.

The S-70 Okhotnik drone developed by the Sukhoi Design Bureau features stealth technology and the flying wing design (it lacks a tail), which diminishes its radar signature. According to the data of open sources, the drone has a take-off weight of 20 tonnes and can accelerate to roughly 1,000 km/h.

The Okhotnik heavy attack drone performed its debut flight on August 3, 2019. The flight lasted over 20 minutes under an operator's control. On September 27, 2019, the Okhotnik performed a flight together with a Su-57 fifth-generation fighter jet. The drone maneuvered in the air in automated mode at an altitude of around 1,600 meters and its flight lasted over 30 minutes.

Saab Appoints Mats Palmberg as India Head

Mats Palmberg, currently Head of Saab's Gripen India Campaign and Vice President of Industrial Partnerships at Saab, will be the new Chairman and Managing Director of Saab India Technologies Pvt. Ltd (SITPL).

Mats' appointment as Saab's Head of Country Unit India further reinforces the company´s long-term commitment to India. Mats already has many years of experience working across the Indian defence and aerospace industry at all levels. As the leader of Saab's Gripen campaign in India he has been a strong advocate for Saab's commitment to Make-in-India and Atma Nirbhar Bharat.

Mats' predecessor, Ola Rignell, will take on new responsibilities within Saab in Sweden after his successful time spent expanding Saab's presence in India. Mats Palmberg will take over from Ola Rignell on 1 May 2022.

"Mats Palmberg assumes the vital role of leading Saab's Indian business at a very important time. I salute the great work done by Ola Rignell and I welcome the continuing expertise and continuity that Mats' appointment brings. The Indian government's policy of encouraging Atma Nirbar Bharat and Make-in-India is fully in line with Saab's commitment to building a strong industrial base in India. We see opportunities for further and deeper partnerships with Indian companies, to meet growing needs at a global level. With his long experience of India and deep knowledge of building industrial partnerships, Mats is well-suited to drive Saab's goals in India; to build strong partnerships with Indian industry and meet the needs of India's defence and security forces," says Dean Rosenfield, Senior Vice President, Chief Marketing Officer, Saab.

Since joining Saab in 1984 Mats has held senior management positions in marketing, strategy and industrial cooperation during his long career working with commercial and defence programmes in the aeronatics sector. Prior to his current assignment he was Vice President, Head of Marketing and Future Products. He was also instrumental in establishing Saab as a Tier One partner to Airbus and Boeing as well as forging partnerships with many other international OEMs in the aviation world.

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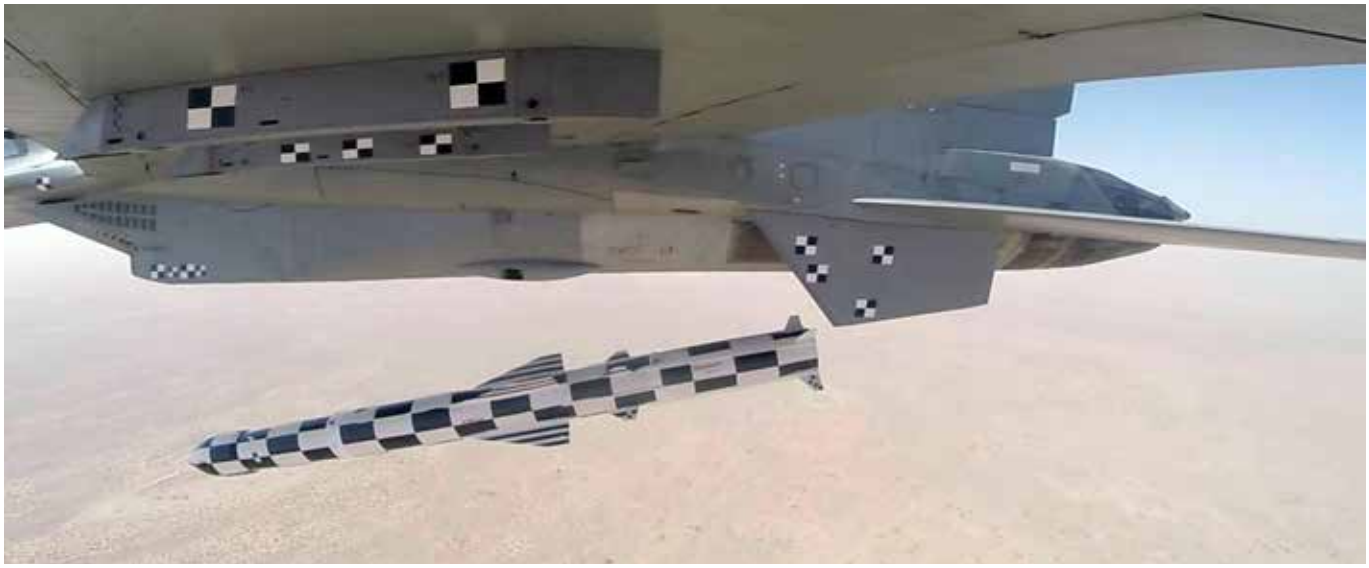

Extended Range Version of Brahmos Air Launched Missile Fired from SU 30 Aircraft

India has successfully fired the Extended Range Version of BrahMos Air Launched missile from Su-30 MKI fighter aircraft. The launch from the aircraft was as planned and the missile achieved a direct hit on the designated target in the Bay of Bengal region.

It was the first launch of Extended Range version of BrahMos missile from Su-30MKI aircraft. With this, the IAF has achieved the capability to carry out precision strikes from Su-30MKI aircraft against a land, sea target over very long ranges. The dedicated and synergetic efforts of the IAF, Indian Navy, DRDO, BAPL and HAL have proven the capability of the nation to achieve this feat. The extended range capability of the missile coupled with the high performance of the Su-30MKI aircraft gives the IAF a strategic reach and allows it to dominate the future battle fields.

Rafael inaugurates SPYDER Defense System Simulation & Training Center in Philippines

Rafael Advanced Defense Systems has inaugurated the SPYDER Defense System Simulation and Training Center in the Philippines in a ceremony held in the facility at an Air Base in Floridablanca, Philippines. "This is yet another milestone in the ongoing Ground Based Air Defense System project and it is definitely a very important one. Certainly, the launchers and the missiles are a valuable asset, but the materiel is worth little without the air defender. It is not enough to hold the best systems, we have to train hard and maximize our potential as well as that of the systems. This training center comes to build the future generation of Philippine air defenders, their resolute spirit and professionalism.", said

Executive Vice President, Brigadier General (Ret.) Pinhas Yungman, Head of the Air & Missile Defense Directorate, Rafael Advanced Defense Systems

RAFAEL's Executive VP Pinhas Yungman, Secretary of National Defense of the Philippines Delfin Lorenzana, Commanding General of PAF Lt. Gen. Connor Anthony Canlas Sr., SIBAT Director for Asia and the Pacific Eytan Levi, and other officials took part in the opening ceremony. During the ceremony, Secretary Lorenzana along with PAF Senior Leaders were able to see first-hand, the missile engagement simulation and the training capabilities provided by the center. The SPADS Simulator - Training Center is the Philippine Air Force's first missile training center which will serve as a training ground for future air defenders to prepare them for real-time threats as well as enhancing personnel knowledge and skills. The training center is part of the GBADS Acquisition Project of the Philippine Air Force which will further enhance the nation's defensive capabilities.

Embraer installs Ka-Band in Flexjet's Legacy 500 fleet in Europe

Embraer announced that Flexjet is the first Legacy 500 customer in the world to install Ka-Band, which provides fast, home-like connectivity, as an aftermarket modification on its European fleet of the business jet model. This new capability is available through a service bulletin for the Legacy 450, Legacy 500, Praetor 500 and Praetor 600 business jets. Embraer also offers the Ka-Band from the factory, as an optional item, for the Praetor 600 and the Praetor 500.

"We saw demand in the market for Embraer to offer this aftermarket solution and now we are able to proceed with the installation of this feature in the field," said Marsha Woelber, Vice President of Worldwide Executive Jets Customer Support & Aftermarket Sales, Embraer Service & Support. "This modification is available to customers who desire this high-speed capability which provides the best experience and connectivity on board."

The Ka-Band provides high-speed internet access for the fastest in-flight connectivity, enabling customers to access e-mails, exchange files, stream video content, among other features, allowing several devices connected at the same time.

Flexjet European Managing Director, Marine Eugène, said: "With Ka-Band already available on our Praetor 600s in Europe, we know what a tremendous addition it is to the onboard experience for our passengers. They can remain productive in their work or enjoy endless entertainment options as they fly. We were delighted to work with Embraer to add this facility to our Legacy 500s, making us the only large fleet operator in Europe to offer Ka-Band on every aircraft."

Major upgrade to Compass Call with open system architecture

BAE Systems successfully flight tested three third-party software applications on its Scalable Adaptive Bank of Electronic Resources (SABER) technology. SABER is the backbone of Compass Call, a next-generation electromagnetic attack weapon system that disrupts enemy command and control communications, radar, and navigation systems. The test flights demonstrated the technology's agility in delivering advanced electromagnetic warfare capabilities to Compass Call.

"BAE Systems has been keeping Compass Call ahead of the curve as its prime mission system contractor for more than 20 years," said Jared Belinsky, director of Electronic Attack Solutions at BAE Systems. "We're continuously developing technology to help dominate the electromagnetic spectrum and keep our military service members safe."

The hallmark of SABER is its open system architecture that enables the rapid integration of new technology through software updates instead of hardware reconfiguration. It also allows for multiple system upgrades to counter emerging threats.

The U.S. Air Force Compass Call Test Team, with support from BAE Systems, tested the new applications. BAE Systems integrated the applications with a non-proprietary SABER software development kit. The successful flight test is leading to fielding of the SABER capability on the EC-130H.

The EC-130H Compass Call mission system is currently being transferred to the Gulfstream G550 business jet, designated the EC-37B .

Work on SABER is being conducted at BAE Systems' state-of-the-art facility in Hudson, N.H.

Naval Placement Agency and L&T Sign MoU for Resettlement of Navy Ex-Servicemen

The Indian Naval Placement Agency (INPA) and L&T Shipbuilding (LTSB), L&T's shipbuilding arm, signed an MoU to explore opportunities for the recruitment of naval Ex-Servicemen at LTSB. VAdm Suraj Berry, Controller of Personnel Services, Indian Navy and Ashok Kumar Khetan, Head Shipbuilding Business L&T signed the MoU in the presence of Senior Officials from the Indian Navy and L&T. Through the MoU, INPA will identify a pool of technical Ex-Servicemen for relevant roles as per recruitment standards of L&T. The company will, in turn, enable these individuals to transition to the corporate sector through in-house assimilation and training programs.

Commenting on this occasion, Jayant D Patil, Whole Time Director (Defence & Smart Technologies) and Member of L&T Board said, "We have been trusted partner to Naval indigenisation plans since the mid-eighties having designed and developed a bouquet of Weapon Systems, Engineering Equipment and Systems, range of Control systems such as IPMS, IBS, APMS, etc., and Life Support and Logistics systems. We are delighted to formalize our partnership with the Navy through the signing of this MOU with INPA. This would ease and facilitate the recruitment of some of the most experienced Navy professionals into L&T and enable L&T to serve the Navy better through a mutually beneficial relationship.

L&T under the aegis of its diversity inclusion initiative aims to offer ex-servicemen with a technical background, opportunities in line with their qualifications, experience and attributes acquired during their service period. This diverse set of experiences, perspectives and background are crucial to the innovation and development of new ideas. This initiative of LTSB stems from the company's vision of breaking new grounds to allow diversity and inclusion to take deeper roots across all its verticals.

In his concluding remarks, Vice Admiral Suraj Berry said that "The INPA is committed to facilitating Ex-Servicemen, to find employment opportunities after their service to our Nation". He further stated that it was the endeavour of IN to work with the corporate sector to identify and develop programs that enable experienced personnel to contribute to nation-building and become truly AatmaNirbhar in all sectors. We look forward to working with LTSB on this initiative".

IAI to Convert 4 B777-300ER Aircraft of Cargojet Canada

Israel Aerospace Industries (IAI) has signed an agreement to carry out passenger-to-freighter (P2F) conversions for Cargojet Canada's Cargo Airline. The agreement was signed as a result of the growing global demand for cargo aircraft, and includes the conversion of 4 B777-300ER aircraft and additional options in the future.

IAI has recently signed a number of new agreements for cargo conversions, including converting B777-300ER aircraft for Emirates and establishing new conversion lines worldwide, including in Abu Dhabi, Ethiopia, and other locations around the world. This agreement with Cargojet strengthens IAI's strategy to expand its growing cargo conversion lines globally.

Cargojet is Canada's leading provider of time sensitive premium air cargo services to all major cities across North America, providing dedicated ACMI and International Charter services and carries over 25,000,000 pounds of cargo weekly. Cargojet operates its network with a fleet of thirty-one (31) aircraft and is a long-term IAI customer for aircraft conversions. Currently, IAI is converting the first B777-300ER aircraft for AerCap Cargo, who are also the co-investor on the program, in a process which is expected to finish in 2022. This is the first conversion of this model in the world.

Boaz Levy, IAI President and CEO, said: "We have been experiencing a rise in demand for converted cargo aircraft. The rise in e-commerce, coupled with the COVID-19 pandemic, has resulted in cargo aircraft becoming a central player in the world of aviation. IAI has decades-long experience in aircraft cargo conversions, and combines advanced technologies with its expert production capabilities in aviation to provide the best solution on the market. Cargojet's selection of IAI to carry out the B777-300ER aircraft conversions is a testament to the trust and customer satisfaction in IAI's conversion process and in the final product, and we thank Cargojet for the trust they have placed in us."

Paul Rinaldo, Cargojet's Senior Vice President Maintenance & Engineering, said: "IAI is an important aviation partner and the B777-300ER conversions supports Cargojet's international expansion and further strengthens the relationship between our two companies."

IAI is home to Israel's most advanced systems for land, sea, air and space. As the home of aviation in Israel, the company unites all activity in the field: maintenance (MRO), business jets, converting passenger aircraft to cargo configuration, hangars and aviation arrays, aircraft upgrading and more. With knowledge and accumulated experience in aviation spanning almost 70 years of the company's existence, excellent human capital and groundbreaking technologies, the group is in line with the world's leading aviation companies. Among its clients are some of the world's leading companies, like Amazon, DHL, Lockheed Martin, Boeing, Gulfstream and more.

Boeing Names Northern Virginia Its Global Headquarters; Establishes Research & Technology Hub

Boeing [NYSE: BA] announced that its Arlington, Virginia campus just outside Washington, D.C. will serve as the company's global headquarters. The aerospace and defense firm's employees in the region support various corporate functions and specialize in advanced airplane development and autonomous systems. In addition to designating Northern Virginia as its new headquarters, Boeing plans to develop a research & technology hub in the area to harness and attract engineering and technical capabilities.

"We are excited to build on our foundation here in Northern Virginia. The region makes strategic sense for our global headquarters given its proximity to our customers and stakeholders, and its access to world-class engineering and technical talent," said Boeing President and Chief Executive Officer Dave Calhoun.Boeing will maintain a significant presence at its Chicago location and surrounding region.

PRI Provides Conformity Audits to AS13100 – AESQ standard

PRI (Performance Review Institute) Registrar is providing auditing services to support supplier conformity to SAE AS13100. This aerospace quality standard was developed by the SAE G-22 Aerospace Engine Supplier Quality (AESQ) Standards Committee for the aero engine supply chain.

The standard includes AS9100 requirements, and additional quality requirements and techniques such as Global 8D problem solving methods, Advanced Product Quality Planning (APQP), Production Part Approval Process (PPAP), First Article Inspection (FAI), human factors, and other quality practices to manage critical engine component manufacturing.

The leading aerospace OEMS which comprise AESQ 1 require their suppliers to conform to this standard by January 1, 2023 and has provided materials and Supplier Forums to support their efforts.

PRI Registrar auditors have deep experience of the aerospace industry and AS13100 training. They will provide valuable gap audits at the beginning of the implementation process, and conformity audits once the supplier has implemented all AS13100 requirements.

Randy Daugharthy, Director, PRI Registrar, said: "Based on the pilots conducted so far, it's clear that suppliers will greatly benefit from the audits conducted by our experienced auditors. We look forward to supporting engine suppliers in meeting this important requirement deadline and on-going conformance."

Chief of Army Staff Visits Ladakh

General Manoj Pande, Chief of Army Staff visited Ladakh region after assuming the reins of Indian Army.

The Army Chief was briefed on the security situation along the borders with special focus on Eastern Ladakh. The high level of operational readiness being maintained by the forces while maintaining a high tempo of capability development was highlighted.

Chief of Army Staff met RK Mathur, Lieutenant Governer of Union Territory of Ladakh along with Lieutenant General Upendra Dwivedi, General Officer Commanding-in-Chief, Northern Command and Lieutenant General A Sengupta, General Officer Commanding, Fire and Fury Corps.

A detailed discussion on issues related to Civil-Military cooperation and the role of Indian Army in developmental activities in the Union Territory of Ladakh also held.

During his visit, General Manoj Pande, visited forward areas in Eastern Ladakh and interacted with troops deployed along the Line of Actual Control in the most difficult and inhospitable terrain in the world.

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BEL achieves record turnover of Rs. 15000 Crores

Anandi Ramalingam
CMD,BEL

Navratna Defence PSU Bharat Electronics Limited (BEL) has achieved a turnover of about Rs.15000 Cr (Provisional & Unaudited), during the Financial Year 2021-22, against the previous year's turnover of Rs. 13,818 Cr, despite challenges posed by the COVID-19 pandemic and global semiconductors shortage.

BEL's Order Book as on April 1, 2022, is around Rs. 57000 Cr. In the year 2021-22, BEL secured significant orders worth (approx.) Rs.18000 Cr. Some of the major orders acquired during the year were Avionics Pack for Light Combat Aircraft (LCA), Advanced Electronic Warfare Suite for Fighter Aircraft, Instrumented Electronic Warfare Range (IEWR), Electronic Voting Machine (EVM) & Voter Verifiable Paper Audit Trail (VVPAT), Cdr TI- T90 Tank, COMINT System, Radar Warning Receiver (RWR) & Missile Approach Warning System (MAWS) for C-295 Programme, Electronic Gun, IoT Gateway, etc.

Some of the flagship projects executed during FY 2021-22 were Missile Systems (Air Defence Weapon System & LRSAM), Command & Control Systems, Communication and Encryption products, various Sonars, Electro-optic Systems, Fire Control Systems, Gun Upgrades, various Radars, Electronic Warfare Systems, Coastal Surveillance System, Un-manned Systems, Home Land Security Systems, Smart City projects, K-FON, Medical Electronics, etc.

BEL achieved Export sales of around US$ 32.26 Million during FY 2021-22. Major products exported included Coastal Surveillance System, Trans-Receive (TR) Modules, EO-IR Payload System, Compact Multi-Purpose Advanced Stabilization System (EOS CoMPASS), Solar Hybrid Power Plant, Data Link, Electro-Mechanical parts, Low Band Receivers (LBREC), Medical Electronics, Spares for Radars, etc.

BEL's Chairman & Managing Director, Anandi Ramalingam, said: "Realising our country's goal of achieving Atmanirbhar Bharat is of paramount importance. BEL will make concerted efforts to achieve self-reliance through Make in India initiatives, indigenisation, import substitution, outsourcing to Indian private industry and enhanced thrust on MSME and GeM procurement. The Company is all set to expand its wings and increase its global footprints by making all-out efforts to tap new markets across the globe. BEL will continue to explore new growth opportunities through diversification, capability enhancement and competitiveness, modernisation, etc. BEL has ventured into new potential businesses such as Arms & Ammunition, Medical Electronic Devices, Unmanned System Platforms, etc., and is poised to make significant headway in these segments in the years to come."

IAI and DRDO Completed Series of MRSAM Air & Missile Defense System Trials

Boaz Levy
CEO,IAI

Israel Aerospace Industries (IAI), together with India's Defense Research and Development Organization (DRDO), successfully completed a series of trials that resulted in four successful interceptions by the jointly-developed MRSAM Air and Missile Defense System. The interceptions were carried out in an operational setting against various scenarios, at different interception ranges, interception heights and challenging angles. The systems were operated by India's Air Force and Navy, alongside DRDO and IAI engineers.

The MRSAM provides an integrative solution that includes an advanced, fully digital Phased Array Radar, a command and control center, mobile launchers, and highly energetic interceptors with advanced RF Seeker. The system was tested in India by both Israeli and Indian officers together with engineers and experts. The overall system as well as all the system components satisfied the customer's expectations. As part of the trial, two interceptors were launched from a portable land-based system and two others from a naval-based system, operated from Indian Navy ships. The threats were detected by the system's radar, acquired by the interceptor, and successfully intercepted. All the system components completed the trial successfully, as planned.

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DRDO & Indian Navy conduct successful maiden flight-test of Naval Anti-Ship Missile

Defence Research and Development Organisation and Indian Navy successfully conducted maiden flight-test of indigenously developed Naval Anti-Ship Missile launched from a Naval Helicopter from Integrated Test Range (ITR), Chandipur off the coast of Odisha. The mission met all its objectives. It is the first indigenous air launched anti-ship missile system for the Indian Navy.

The missile followed the desired sea skimming trajectory and reached the designated target with high degree of accuracy, validating the control, guidance, and mission algorithms. All the sub-systems performed satisfactorily. The sensors deployed across the test range and near impact point tracked the missile trajectory and captured all the events.

The missile employed many new technologies, including an indigenously developed launcher for the helicopter. The missile guidance system includes state-of-the-art navigation system and integrated avionics. The flight test was witnessed by senior officers of DRDO and the Indian Navy.

Defence Minister Rajnath Singh congratulated DRDO, Indian Navy and associated teams for the maiden developmental flight test. He said, India attained a high level of capability in the indigenous design and development of Missile systems.

Secretary Department of Defence R&D and Chairman DRDO Dr G Satheesh Reddy appreciated the efforts of the project team for successfully proving mission objectives. He complimented the Indian Navy and Naval Flight Test Squadron for their support to the project and said that the system will strengthen the offensive capability of the Indian Navy.

Schiebel CAMCOPTER® S-100 performs Maritime Surveillance for Danish Navy

The Royal Danish Navy (RDN) is operating the Schiebel CAMCOPTER® S-100 for maritime surveillance. The Remotely Piloted Aircraft System (RPAS) service is delivered by the European Maritime Safety Agency (EMSA).

Stationed in Denmark's northernmost town Skagen, the CAMCOPTER® S-100 is supporting the RDN alongside other national authorities in carrying out various maritime surveillance tasks, including detecting, verifying, and providing information on potential oil spills and discharges at sea.

All data gathered from the flights is shared live through the EMSA RPAS Data Centre allowing users to monitor any unusual activity at sea with a potentially harmful impact on the safety and security of persons and vessels in the area or affecting the environment itself. The S-100's multiple state-of-the-art sensors significantly enhance the maritime surveillance capabilities of the RDN.

The UAS is equipped with an L3 Wescam Electro-Optical / Infra-Red (EO/IR) camera gimbal, an Overwatch Imaging PT-8 Oceanwatch and an Automatic Identification System (AIS) receiver.

Hans Georg Schiebel, Chairman of the Schiebel Group, said: "Schiebel has been successfully working with EMSA in several European countries so far. We are proud that the S-100 is making such an essential impact, now also for the Royal Danish Navy."

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Sergey Chemezov reports to Russian President on Rostec 2021 performance

Sergey Chemezov, CEO of Rostec State Corporation, presented the Company's 2021 annual report to Russian President Vladimir Putin. One of the key achievements of the Corporation is a 9.9% increase in its consolidated revenue, which amounted to 2.06 trillion rubles in 2021, and an increase in the share of civilian products in its sales mix, which amounted to 45.5%.

In monetary terms, sales of civilian products generated over 900 billion rubles. This result is due to the implementation of large-scale projects in aviation and engine construction, automotive manufacturing, electronics and IT, health care, and other areas.

The consolidated net profit of the Corporation increased by 47% to 163.5 billion rubles, while its EBITDA was up 18.3% and amounted to 334.9 billion rubles. The output per employee was 3.5 million rubles (+ 9.5%).

Rostec always pays special attention to technological advances and the development of new products. In 2021, the Corporation's enterprises registered 834 patents and 474 know-how and developed more than 230 innovative products. The total investment in R&D reached 170 billion rubles.

More than 70 technological modernization projects were implemented. Among other things, the Company upgraded the facilities producing helicopter engines of the VK-2500 family in St. Petersburg and the enterprises of optical industry in the Vologda and Novosibirsk regions.

Sergey Chemezov mentioned several premieres of the last year as the most memorable projects in the aviation industry – a prototype of the Checkmate light tactical aircraft, the Okhotnik UAV with a flat jet nozzle and the Mi-171A3 offshore helicopter for servicing fuel and energy facilities.

The Company also received the certificate for the series production of PD-14 engines in 2021, tested the aircraft equipped with the power plant of this type under the MC-21 program, and its first MC-21 with the "black wing" made of domestic composite materials took off for the first time.

Reporting on the achievements of the engine industry, the head of Rostec also spoke in detail about the first Russian marine diesel-gas turbine unit M55R, which is supplied in series for the "Admiral" frigates of Project 22350 under the import substitution program.

"Rostec is celebrating its 15th anniversary this year. The Corporation approaches this date with renewed vigor and a substantial margin of safety. Let me remind you that Rostec made about 511 billion rubles in revenues in 2009. Last year, the Company passed the 2 trillion ruble milestone, an almost fourfold increase. We ensured almost 100% fulfillment of the state defense order. At the same time, more than 45% of the revenues came from civilian production, which is a record achievement for the defense industry. Our next target is 50% by 2025. First and foremost, we are talking about industries that are of vital importance to the state, such as aircraft and automotive engineering and manufacturing, engines, electronics, new materials, and healthcare. For the Corporation, it is not just a business task, it is our responsibility before the country," CEO of Rostec State Corporation Sergey Chemezov said.

The head of Rostec elaborated on the latest developments for healthcare. Among them are the Aventa-Vita portable ventilator, the SLE 6000 lung ventilation apparatus for newborns and the Oxypolus device which produces medical grade oxygen from ambient air.

Among the significant achievements, the head of Rostec also named the delivery

Defence Minister Onboard Indian Navy's P81 Aircraft

Defence Minister Rajnath Singh, during his visit to Mumbai undertook a sortie on the Indian Navy P8I Long Range Maritime Reconnaissance Anti-Submarine Warfare aircraft.

During the mission, long range surveillance, electronic warfare, imagery intelligence, ASW missions and Search & Rescue capabilities employing the state-of-the-art mission suite and sensors were demonstrated.

The induction of P8I aircraft commencing 2013, have significantly enhanced Indian Navy's persistent surveillance operations in the Indian Ocean Region (IOR).The flight crew for this sortie comprised of two Pilots and seven Naval Air Operations Officers including three women officers.

AirAsia India offers 50% off International Connecting Baggage fees

AirAsia India announced a special offer of 50% off its International Connecting Baggage (ICB) fees, for bookings made till 30th June 2022. International Connecting Baggage fares are significantly lower than the standard excess baggage charges, enabling guests connecting from or to AirAsia India domestic flights to international flights on other airlines, as international flights typically have higher baggage allowances than domestic flights. Guests can pre-book ICB and choose from three excess baggage slab options of 8 kgs, 15 kgs or 30kgs, in line with the predominant international baggage allowances of major international carriers. These can be pre-booked in addition to the 15 kg free check-in baggage allowance on standard fares.

Flyers connecting to or from international flights from AirAsia domestic flights can now pre-book their excess baggage at the significantly discounted price of ₹100 per kg, compared to the standard excess baggage charges of ₹450 per kg for pre-booking excess baggage and ₹500 per kg excess baggage charges at the airport.

As AirAsia India also has special discounts and a 25 kg standard baggage allowances for students, now students traveling internationally can also carry additional baggage beyond 25 kgs at these discounted rates.

ICB fees can be pre-booked up to 2 hours prior to the AirAsia domestic flight departure while booking, or while managing their booking or checking-in on airasia.co.in.Guests would be asked to show their international flight boarding pass at the time of check-in at the airport for an international flight within 24 hours of the AirAsia India flight.

of more than 100 million sets of vaccines against COVID-19 and the market launch of a new anti-coronavirus drug, COVID-globulin, which has been used to treat patients in the country's hospitals since 2021.

Sergey Chemezov stated that Rostec views its employees as its main asset. Over the year, the Company's expenses for social benefits provided to its staff (voluntary medical insurance, health resort treatment, corporate sports activities, etc.) increased by 13% from 10.8 to 12.2 billion rubles. This includes about 1 billion rubles for the housing program to help the company's employees buy new homes.

Rostec also continues to set up a non-state pension system. The average salary in the Corporation's organizations increased to 61.600 rubles in 2021, which is 14% higher than the national average salary.

Can face any challenge along with IAF, IN: New Army Chief

The Chief of the Army Staff, General Manoj Pande calling on the Union Minister for Defence, Shri Rajnath Singh, in New Delhi on May 02, 2022.

General Manoj Pande, the new Chief of the Indian Army, says that ensuring very high standards of operational preparedness to tackle the current, contemporary and future challenges through the entire spectrum of conflict would be among his top priorities

General Manoj Pande has taken charge as the 29th Chief of the Indian Army after the superannuation of General M M Naravane. "It is a matter of pride and honour for me that I have been handed over the leadership of the Indian Army. I accept it with full humility," said Gen Pande, who is the first officer from the Corps of Engineers to become the Army Chief.

"My utmost and foremost priority would be to ensure very high standards of operational preparedness to face the current, contemporary and future challenges through the entire spectrum of conflict," said the new Army Chief after he was presented a ceremonial guard of honour.

Gen Pande said the Indian Army will face every challenge that comes its way in coordination with the Indian Air Force (IAF) and the Indian Navy (IN). Incidentally, IAF Chief Air Chief Marshal V R Chaudhari and Navy Chief Admiral R Hari Kumar were also present at the guard of honour for Gen Pande.

"My aim would be to enhance inter-services cooperation and synergy," said Gen Pande.

India's challenges

"The geo-political situation in the world is changing rapidly, posing several challenges before India. We are prepared for every serious situation. I will try to carry forward the good work of my predecessor," said Gen Pande.

"In terms of capability development and force modernisation, my effort would be to leverage new technologies through indigenization and Atma Nirbharta (self-reliance)," the Army Chief said.

"The welfare of the soldiers, ex-servicemen and veer naris would also be my foremost priority," he added.

Gen Pande pointed out that the Indian Army has a glorious tradition. "The Army has also contributed to nation building. I would like to assure through you that the Indian Army will be fully committed to the values of freedom, liberty and equality," he elaborated.

Glittering track record

Before being elevated as Army Chief, Gen Pande was holding the position of Vice Chief. Earlier, he was the Eastern Army Commander and looked after India's borders with China, Myanmar and Bangladesh.

The Army Chief is an alumnus of the National Defence Academy (NDA) and was commissioned in December 1982 in the Corps of Engineers (The Bombay Sappers). The new Army Chief commanded 117 Engineer Regiment during Operation Parakram in the sensitive Pallanwala Sector of Jammu and Kashmir, along the Line of Control.

Gen Pande is a graduate of Staff College, Camberley (United Kingdom) and attended the Higher Command (HC) and National Defence College (NDC) Courses.

In his 39 years of distinguished military career, he has commanded an Engineer Brigade in the Western Theatre as part of Strike Corps; an Infantry Brigade along the Line of Control in Jammu and Kashmir; a Mountain Division in the High Altitude Area of Western Ladakh and a Corps deployed along the Line of Actual Control (LAC) and in Counter Insurgency Operations area of Eastern Command.

Gen Pande's staff exposures include Brigade Major of a Mountain Brigade in the North East; Assistant Military Secretary (AMS) in Military Secretary's Branch; Colonel Q of a Mountain Division in High Altitude Area and Brigadier General Staff (Operations) at Headquarters Eastern Command.

He has served as Chief Engineer in the United Nations Mission in Ethiopia and Eritrea. He has also tenanted the appointments of Additional Director General in the Military Operations Directorate at Army Headquarters, Chief of Staff Headquarters Southern Command and Director General Discipline Ceremonial and Welfare at the Army Headquarters.

He was Commander-in-Chief, Andaman and Nicobar Command (CINCAN) from June 2020 to May 2021 and General Officer Commanding-in-Chief Eastern Command from June 2021 to January 2022.

MTAR gets approval for Gee Pee Aerospace & Defence acquisition

The Board of Directors of MTAR Technologies Ltd ("MTAR") have approved the acquisition of shares of Gee Pee Aerospace & Defence Pvt. Ltd., an MSME Company for a consideration of Rs 8.82 Crs. The Management is currently in discussion with the shareholders of Gee Pee Aerospace & Defence Pvt. Ltd. on the terms and conditions. This acquisition is expected to provide a wide array of benefits under MSME category including the increased potential of entering into offset partnership with global OEMs as foreign partners get an offset credit of up to 1.5 multiple on Indian content. Further, the public procurement policy mandates procurement of up to 20% of requirements of Govt departments through MSMEs, which is expected to augment our customer base. In addition, this shall enhance our capacity that enables us to address more orders, thereby expanding our product portfolio.

Commenting on the acquisition, Parvat Srinivas Reddy, Managing Director, MTAR Technologies, said, "The acquisition of Gee Pee Aerospace shall strengthen our capacities in bottleneck areas, which is expected to fuel our revenue growth further specifically in defense and allied sectors. We reiterate the revenue growth guidance of 30% - 35% YoY with an EBITDA of around 30% in spite of supply chain disruptions due to COVID 19 pandemic followed by global geopolitical crisis for FY 22 and a revenue growth guidance of 50% YoY with an EBITDA of around 30% for FY 23"

MTAR has seven strategically based manufacturing units including an export-oriented unit each based in Hyderabad, Telangana. MTAR caters to Civil Nuclear Power, Space & Defence and Clean Energy sectors. The Company has a long-standing relationship of over four decades with leading Indian organisations and global OEMs.

IndiGo appoints Pieter Elbers as CEO, Rono Dutta retires

The Board of Directors of InterGlobe Aviation Limited (IndiGo) appoints Pieter Elbers as Chief Executive Officer, subject to regulatory approvals. He will join IndiGo on or before 01 October 2022. He succeeds Ronojoy Dutta who has decided to retire on 30 September 2022, after guiding IndiGo through the turbulent Covid period.

Commending his service, Rahul Bhatia, Managing Director of IndiGo said, "The Board of Directors and I would like to thank Rono for effectively leading our business for almost four years with a steady hand through what has been the most turbulent period in the airline's history and aviation globally" Since 2014, Mr. Elbers has served as the President & Chief Executive Officer of KLM Royal Dutch Airlines. He is also a member of the Executive Committee of the Air France – KLM Group. He started his career at KLM in 1992 at their Schiphol hub and over time, held several managerial positions in both The Netherlands and overseas in Japan, Greece and Italy. After he returned to The Netherlands, he was appointed as the Senior Vice President of Network & Alliances, before he was promoted in 2011 as the Chief Operating Officer.

Rostec to fit Ansat helicopter with VK-650V engine

JSC ODK Klimov of Rostec United Engine Corporation is working on adapting the VK-650V for the engine replacement in Ansat, Ka-226T and other helicopters. As of now, an addendum to the terms of reference has been drawn up, and coordination schedules for the helicopters and the engine are being finalized. State-of-the-art "digital twin" technology will be applied for further development of the engine. This technology enables high-performance computing, control system development, simulation of field tests, and optimization of automated data exchange and data processing.

"Considering the wide application opportunities of the VK-650V, bench tests will be carried out with the prototypes of the commonality-based engine. This year we have to provide the Ansat helicopter with full-scale mock-ups for systems layout, and next year we have to supply the engines for flight tests. In 2024 we plan to obtain a type certificate for a domestic turboshaft engine for Ansat and Ka-226T helicopters," said Vladimir Artyakov, First Deputy CEO of Rostec State Corporation.

The advantages of the VK-650V include modular design, long engine life, and digital auto-regulation system of the FADEC type. The commonality-based engine is suitable for various types of multi-purpose helicopters, both in twin-engine and single-engine versions. Engineering tests of the power plant are currently underway. In 2019, UEC has initiated the development of an engine in the 500-600 hp class. The main developer of the engine is JSC ODK Klimov.

BAE Systems delivered New CV90 Combat Vehicles to Norway

The first four CV90 Combat Support Vehicles were delivered to the Norwegian Armed Forces during a ceremony hosted by local industry partner Ritek AS in Levanger, Norway.

The four vehicles are the first of 20 modernized CV90 engineering vehicles BAE Systems will deliver, in partnership with Ritek and the Norwegian Defense Materiel Agency.

"While rebuilding these vehicles, it has been important for the government that Norwegian jobs are supported, said Bent Joacim Bentzen, the State Secretary in the Ministry of Defense. "This has been possible thanks to a smooth and well-functioning collaboration between the Armed Forces, Defence Material Agency, Ritek and the licenser BAE Systems Hägglunds."

Partnering with the Norwegian defense industry was a key factor in getting the contract signed and the vehicles into production quickly, under measures implemented by the Norwegian parliament to support the country's economy through the challenges posed by the coronavirus pandemic.

BAE Systems serves as the main supplier, while Ritek plays a central role in purchasing, logistics, final assembly, and integration. Ritek has also been responsible for coordinating the project and growing the participation of Norwegian industry. As a result, about 20 Norwegian companies are now qualified suppliers of products and components for the CV90 vehicles, and an integral part of BAE Systems' Norwegian supply chain.

"This is an example of how it is possible to achieve fast deliveries through well-functioning cooperation," said Gro Jære, Director of the Defence Material Agency. "Just over a year after the contract was signed, we can now confirm that we are in the process of delivering the latest production series of CV90-based combat support vehicles to the Armed Forces. I would like to thank BAE Systems, Ritek, and my project staff for their flexibility, focus on delivery and effort so far."

The close cooperation between all parties has broadened Norway's overall national capacity in the defense vehicle space and its preparedness to support the vehicles. The Norwegian CV90 fleet is fully digitalized, and among the most advanced combat vehicles in the world.

"Norway should be proud of its ability to work with political leaders, procurement authorities, and industry to innovateand meet challenges like COVID-19 in a world of uncertainty," said Tommy Gustafsson-Rask, managing director of BAE Systems Hägglunds. "Yet again, this milestone project demonstrates the strength of the relationships between all partners by delivering high-quality vehicles, on time and on cost."

The delivery ceremony coincided with the completion of Ritek's new assembly hall for the CV90 project, which increases the total workshop area to 5,500 square meters. The hall is designed to meet all requirements for lifting capacity and flexibility in Ritek's existing defence-related project portfolio and for future projects.

HAL Pays Highest Dividend to GOI

HAL paid the second interim dividend of Rs. 653.36 crores for the FY 2021-22 to the Government of India.

The dividend cheque was handed over to the Defence Minister, Rajnath Singh by R. Madhavan, CMD, HAL and C. B. Ananthakrishnan, Director (Finance), HAL in the presence of Dr. Ajay Kumar, Defence Secretary in New Delhi. The Company had declared the second interim dividend of Rs. 26/- per equity share of Rs. 10/- each amounting to Rs. 869.41 crores on February 10, 2022, in addition to the first interim dividend of Rs. 14/- per equity share of Rs. 10/- each amounting to Rs. 468.14 crores earlier declared on November 11, 2021, total amounting to Rs. 1337.55 crores which included GoI share of Rs. 1005.17 crores.

"It is the highest dividend declared by the Company after listing of its shares on the Stock Exchange(s) and is more than what has been prescribed under DPE guidelines", says R. Madhavan.

Sanjay Jaju, AS (DP), Chandraker Bharti, JS (Aero), MoD and Alok Verma, Director (HR), HAL were also present on the occasion.

Elbit and Rheinmetall Team Up for Canada's Joint Fire Modernization Project

Elbit Systems and Rheinmetall Canada have signed a Memorandum of Understanding (MOU) for cooperation on proposing a solution for Canada's Joint Fire Modernization (JFM) project. The JFM project intends to enable a near real-time sharing of tactical, operational and strategic fires and effects information through a digital network allowing instantaneous sharing of the Common Operating Picture (COP) including targets, friendly locations and Command and Control informatin.

With Rheinmetall Canada's strong local presence and leadership of the Canadian Integrated Soldier System (ISS) project, and Elbit Systems UK leadership of the British Dismounted Joint Fires Integrators (D-JFI) program and involvement in Canada's Airspace Coordination Centre Modernization (ASCCM) project, the two companies are well positioned to offer a superior solution for the JFM project.

Haim Delmar, General Manager of Elbit Systems C4I and Cyber, said: "We are pleased to team up with Rheinmetall Canada on pursuing this opportunity. I believe that developing a joint fires solution for Canada that draws on the experience that both companies acquire in Canada and in the UK will enable us to offer a higher level of technological maturity, clear growth path and robust Five Eyes compatability."

Stéphane Oehrli, president and CEO of Rheinmetall Canada, commented: "Rheinmetall Canada is pleased to partner with Elbit Systems. With their combined expertise in command, control, communications, and tactical equipment, Rheinmetall and Elbit are ready to deliver dismounted and mounted digital joint fire solutions enabling the Department of National Defence to deliver responsive and accurate joint fire support. Rheinmetall Canada has been successful in winning major contracts due to its agility, capability and drive to innovate. Working with Elbit Systems to develop a flexible, robust, and responsive digital joint fire solution would effectively and comprehensively protect the men and women of the Canadian Army."

Honeywell's Flight Management System Selected by Airbus

Honeywell's (NASDAQ: HON) Flight Management System (FMS) has been selected by Airbus to meet the air traffic management needs of the future A320, A330 and A350 aircraft. With the new FMS, airline customers will achieve best-in-class operational efficiency, reliability, and safety. Additionally, the new FMS also incorporates connectivity with the outside world, including Electronic Flight Bags (EFB), to ease pilot workload and enhance fuel savings with the use of real-time data.

"This win for Honeywell is a testament to Airbus' confidence in our avionics systems," said Jim Currier, president, Electronic Solutions, Honeywell Aerospace. "The new FMS combines multiple current FMS offerings for Airbus into one single solution for their A320, A330 and A350 platforms. Importantly, the new FMS hardware is 15 times more capable than current hardware and enables a path to future enhancements without hardware changes. Honeywell has been supplying flight management systems since Airbus' first A300 went into service, and this win will extend our 35-year partnership well into the future."

Honeywell's FMS family has already been deployed by Airbus on the A320, A330, A350 and A380 platforms. The new FMS is being developed to build upon millions of hours of Honeywell's FMS legacy, with enhanced modularity, advanced functionality, and a multi-core processing platform. At the completion of development, the new FMS will be a standalone federated system, making it easier for operators to support the fleet.

The FMS will be offered as a single standardized hardware and software platform that can be used across the Airbus A320, A330 and A350 aircraft fleet with expected entry into service by the end of 2026. A retrofit solution based on the same core hardware and common software is also planned for the A320 and A330 fleet of aircraft. An FMS provides the primary navigation, flight planning, and optimized route determination and enroute guidance for an aircraft.

ATR 42-600S STOL takes flight in its partial configuration

The new 30 to 50 seater aircraft capable of taking-off and landing on shorter runways will now enter a phase of ground and flight tests

ATR, the world number one regional aircraft manufacturer, announced the successful first flight of the partially configured STOL variant (for 'Short Take-Off and Landing') of its ATR 42-600 aircraft. The flight took off at 10:00

from Francazal airport and lasted 2 hours and 15 minutes.

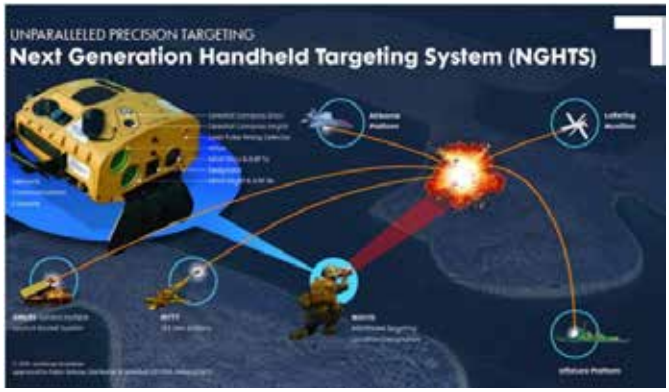
The crew onboard performed a number of tests to measure the upgraded aircraft systems' performance.

Following the successful completion of this first flight, new functionalities will be tested one at a time, starting with the MFC-NG (Multifunctional Computer New Generation), followed by the Autobrake, Ground Spoiler, and increased take off rating systems.

The aircraft will enter its final configuration at the end of the year with the addition of a new larger rudder and move on to the certification phase in 2023. To-date, ATR has recorded 20 commitments from airlines and lessors for this ATR 42-600S.

There are currently close to 500 airports around the world with a runway length between 800 and 1,000 meters (2,625 to 3,281 feet) that could welcome the ATR 42-600S. This new STOL variant will help passengers benefit from an increased regional connectivity.

SCD USA has been selected by Northrop Grumman for InfraRed solution



Northrop Grumman Corporation (NGC) in Apopka, Florida has selected SCDUSA to provide the InfraRed (IR) solution to support its Next Generation Handheld Targeting System (NGHTS) for the United States Marine Corps (USMC).

The SCDUSA's high performance and small Size, low Weight, and Power (SWAP) infrared imaging solution, part of SCDUSA's "Sparrow" product family, selected by Northrop Grumman, demonstrated compelling features which enabled the NGHTS system to meet the USMC's demanding imaging and SWAP requirements. "Our engineering and production teams ensured the rapid and seamless integration of our SWAP cooled IR solution into the Northrop Grumman solution. All of us at SCD. USA are proud to be part of the NGHTS system which provides superior capability for our USMC troops." said Mark Fydenkevez, CEO of SCDUSA.

Rostec completes tests of the first PD-8 engine prototype

During the multi-stage tests, the ODK specialists debugged the automatic control systems and stabilized the engine start-up with further idling. Engineers made the necessary number of runs to record the basic parameters of the engine in all modes of operation, from "idle" to "full throttle" mode.

"The completion of bench tests of the first PD-8 prototype is the most important stage in the development of a new Russian engine for civil aviation, primarily for the import-substituted Superjet 100. Next comes the testing of individual engine components on autonomous stands. It is also planned to test the engine using the IL-76LL flying laboratory aircraft and to carry out a large set of engineering calculations. All this is part of the work to confirm that the performance indicators of the tested engine meet the requirements of the certification basis for the PD-8 engine," says Vladimir Artyakov, First Deputy CEO of Rostec State Corporation.

The PD-8 two-spool turbofan engine, intended for the import substituted passenger aircraft SSJ-New and BE-200 amphibious aircraft, is made using cutting-edge Russian materials and advanced processing technologies, including additive manufacturing. A range of UEC enterprises is involved in the process, widely leveraging the expertise gained when working on the PD-14 engine.

"The test program included measuring of parameters to assess the thermal condition, durability and vibration resistance of engine parts and components during operation. Its air, oil and fuel systems have been checked. The condition of parts and components of the PD-8 prototype engine was assessed during the test using 500 special sensors. The data obtained with their help are subject to further analysis to assess the operability of the main components and systems," says Yury Shmotin, General Designer of UEC JSC.

Airbus Selected Elbit Systems for DIRCM & EW Systems

Elbit Systems was selected by Airbus Defence and Space (Airbus) to provide J-MUSIC™ DIRCM (Direct Infrared Countermeasures) including the Company's Infra-Red-based Passive Airborne Warning Systems (PAWS IR), for Airbus A330-200 MRTT aircraft of additional European Air Force.

The Company's DIRCM systems integrate the latest laser technology, high frame-rate thermal cameras and a compact, dynamic high-speed sealed-mirror turret, delivering high performance defense against ground-to-air IR missiles. Elbit Systems has been cooperating with Airbus on equipping aircraft of additional countries with DIRCM and Electronic Warfare (EW) systems, including NATO's Multinational Multirole Fleet, German Air Force's aircraft, aircraft of the UAE Air Force and others.

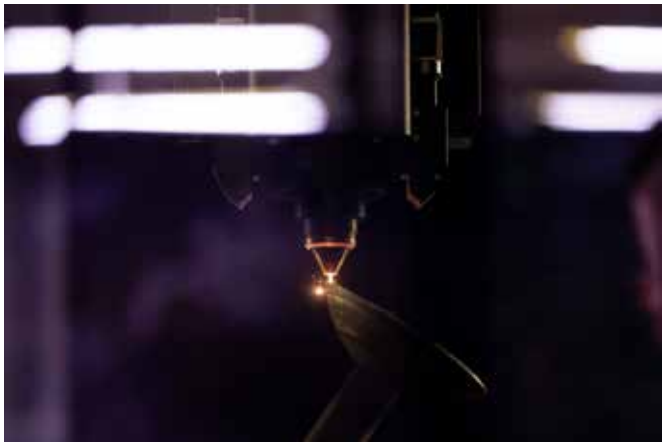
Oren Sabag, General Manager of Elbit Systems ISTAR & EW, said: "We are looking forward to cooperating with Airbus in additional markets as Air Forces have been placing a growing importance on stepping up platform protection".

PGZ-MBDA UK agreement for tank destroyers

Nine companies of the Polish Armaments Group (PGZ) have concluded an agreement with MBDA UK regarding co-operation in the tank destroyer segment. The agreement will allow for the design and production of this class vehicles with the use of MBDA UK Brimstone anti-tank guided missiles.

The document has been signed by representatives of PGZ and MBDA UK. It is a continuation of the agreement concluded in 2019 regarding the co-operation between PGZ and UK partners. The agreement is the basis for further co-operation on the Polish and foreign markets in the area of integration of the ATGMs with the elements of the tank destroyer squadron module indicated by the ordering party and the production of the Brimstone missile in PGZ facilities.

Sebastian Chwałek, CEO of PGZ S.A. said, "In difficult times it is good to have partners one can rely on. We are strengthening our co-operation with the UK defence industry, of which MBDA UK is a leading representative. Today's agreement is another step towards establishing production of the latest generation Brimstone missiles in the country. As a result of the Polish-British co-operation, a joint offer will be made to the Polish Armed Forces and allied forces, our companies will also enter supply chains."



Rostec increases service life of gas turbine engines for long-range aircraft

EC-Kuznetsov, a Samara-based enterprise of Rostec's United Engine Corporation, is improving product quality by introducing robotic equipment for applying special hardening coatings.

UEC-Kuznetsov has commissioned a robotic plasma spraying unit that automatically applies refractory and hardening coatings on engine parts, ensuring absolute repeatability and high quality.

"The new program-controlled equipment meets modern environmental standards. The industrial robot will increase the service life of all types of gas turbine engines, including the 02-series NK-32 engines used on the Tu-160 strategic missile carrier aircraft," a representative of Rostec State Corporation's aviation cluster said.

To increase production throughput, the robotic system has two working areas. In one of them, specialized ceramic coatings are applied to small size parts – first and second stage compressor blades and turbine nozzle sections. With this solution, it is possible to apply coatings on 12 products in a sequence within a single work cycle. The other working area features a special retractable chamber to process large-sized titanium ring blanks up to 1.5 meters in diameter.

"All equipment installed at the UEC-Kuznetsov new production facilities is high-tech and efficient. The robotic plasma spraying facility will process compressor and turbine parts for gas turbine engines not only for the United Engine Corporation's enterprises: the equipment can be widely used as part of import substitution programs in the interests of the domestic industry," said Alexei Sobolev, Deputy General Director and Managing Director of UEC-Kuznetsov PJSC.

Currently, the robotic system covers production demand by processing up to 100 ring parts per month in a two-shift operation. If necessary, the capacity of the equipment can be increased to 300 pieces of large-sized parts and up to 1,000 pieces of small-sized parts.

The robotic plasmatron operates using a current of up to 1,000 amperes while feeding gases (nitrogen and argon) and metal powder for sputtering. The equipment is able to apply coatings from 0.1 mm to 3.5 mm thick. Modern control systems ensure stability of the work process during non-stop round-the-clock operation. The site is equipped with the latest exhaust ventilation units with filters that prevent the ingress of metal dust into the atmosphere, and the soundproof coating inside the cabin completely eliminates the noise impact to ensure comfortable working conditions and compliance with accepted technical standards. The unit is manned by two operators.

Air France-KLM and IndiGo codeshare takes off

Further to the lifting of the Air Bubble Agreement in India and to the necessary governmental approval, Air France-KLM and IndiGo, India's leading carrier, have implemented the extensive codeshare agreement announced in December 2021.

With this partnership, Air France and KLM will ultimately offer their customers access to 30 new Indian destinations and a large number of round-trip combinations for both business and leisure purposes.

Customers will be able to fly to the destination of their choice with one single booking. Flying Blue members will also be able to earn miles on all routes covered by this agreement.

On departure from their respective hubs in Paris and Amsterdam, Air France and KLM already serve four destinations in India: Delhi, Mumbai, Chennai and Bengaluru.

On departure from the multiple points in India, Air France and KLM will open up their global network of over 300 destinations to IndiGo customers, with more than 120 destinations in Europe and about 50 in the Americas.

Henri de Peyrelongue, EVP Commercial Sales Air France-KLM stated: "We are very proud at Air France-KLM to be the first major European airline group to initiate cooperation with IndiGo. This codeshare agreement will allow us to increase our local footprint and to improve connectivity between India - one of the fastest growing markets - and the rest of the world, via our Paris-Charles de Gaulle and Amsterdam-Schiphol hubs. For our customers this means an enhanced network with as many as 30 new destinations in India, as well as increased roundtrip possibilities for both business and leisure travel."

Sanjay Kumar, Chief Strategy & Revenue Officer, IndiGo said,

"We are pleased to commence the partnership with one of the strongest European airline groups, Air France-KLM. This codeshare is in line with our mission to provide air connectivity and affordable fares across India and to international destinations. As this summer sees a huge interest in international travel after a hiatus of two years, the codeshare will extend our on-time, affordable, courteous and hassle-free travel experience across 30 incredible Indian destinations to Air France-KLM customers."

Code share flights are now available for booking on airfrance.com, and klm.com on selected destinations, ramping up on the full scope of 30 destinations before summer.

Collins kicks off installations of new Boeing 737 Enhanced Vision System

Collins Aerospace is beginning installation of its new Enhanced Flight Vision System (EFVS) for Boeing 737 aircraft. Texel Air, operating out of Bahrain International Airport, will be among the first operators to receive the new system that includes Collins' EVS-3600, a multi-spectral imaging sensor to "see through" poor visibility and darkness better than the human eye.

Historically used by military and business aircraft, the newly certified system will allow widespread adoption of EFVS by airlines for the first time. The EVS-3600 uses multiple infrared and visible light cameras providing pilots with a head-up view that exceeds natural vision. When viewed on a head-up display, EFVS increases situational awareness and enables operations in low visibility conditions.

Texel Air's fleet of 737 FlexCombi™ aircraft can be configured to suit a wide range of cargo and passenger flights in the Middle East and North Africa. The EVS-3600 system adds additional capability to these versatile aircraft allowing them to operate safely and efficiently in the most difficult locations and environments.

"We are excited to adopt Collins enhanced vision technology on our 737 fleet," said George Chisholm, director, Texel Air. "Our clients depend on Texel Air for our unique ability to operate a variety of missions in locations ranging from major airports to smaller remote runways. EFVS technology further expands our flight capabilities and allows us to better serve our customers."

"EFVS technology is evolving the way airlines can operate their aircraft," said Troy Brunk, president of Avionics for Collins Aerospace. "737 operators who adopt EFVS may enjoy a competitive advantage from improved on-time performance, operational cost savings, and reduced carbon emissions."

The new EVS-3600 system, along with the complementary HGS-6000 Dual Head-up Guidance System, will be available for retrofit on both 737 NG and 737 MAX models. Additionally, the new EVS will soon be available as a linefit option for new delivery Boeing 737 MAX aircraft.

Rear Admiral Vikram Menon takes over as FOGA

Rear Admiral Vikram Menon, VSM took over duties of Flag Officer Commanding Goa Area (FOGA) and Flag Officer Naval Aviation (FONA) on 30 April from Rear Admiral Philipose G Pynumootil, AVSM, NM, who retired on superannuation after a career spanning over 36 years in service.

Rear Admiral Menon is an alumnus of the National Defence Academy and the Naval War College and was commissioned into the Indian Navy on 01 January 1990. An experienced fighter pilot and Qualified Flying Instructor with over 2000 hours of flying experience, he has flown the Sea Harrier aircraft extensively from INS Viraat. He also served as the Senior Pilot of INAS 300 and commanded INAS 552. He was awarded the Vishist Seva Medal in 2018 while commanding INS Hansa, a premier air station of the Indian Navy. His afloat tenures include command of Fast Attack Craft INS Tillanchang, Offshore Patrol Vessel INS Sharda and the Fleet Tanker INS Shakti. He has also served as Executive Officer of the guided missile destroyer INS Ranvijay.

Navy's training school to augment aviation tech talent pool

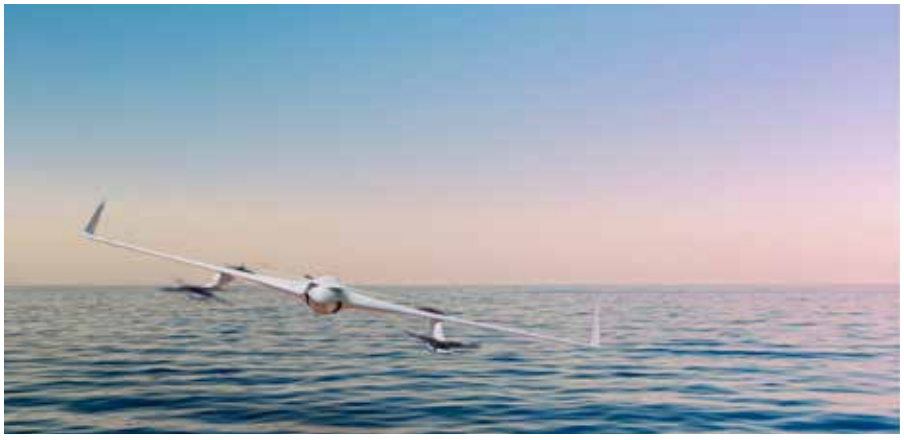
The Indian Navy has started an apprentice training school at Dabolim to upskill ITI students and give them technical skills which will enable them to get employment as technicians for civilian and military aircraft. The school will address the shortfall of aeronautical technicians.

While the first batch includes five students, the Indian Navy intends to scale up the school to accommodate around 50 apprentices per batch. The apprentice Training School (ATS) is attached to the naval aircraft yard at INS Hansa and was inaugurated by master craftsman shipwright Rama Chari, the longest serving employee of the naval aircraft yard.

Assistant chief of naval staff (Air Material) rear admiral Deepak Bansal was present for the inauguration.

The Navy said that the training school will provide "impetus for upskilling the technical workforce and also address the shortfall of aeronautical vocational training centres" in the defence and civilian sectors.

Aeronautics unveils the advanced tactical UAS, Orbiter 4, with a VTOL kit



Aeronautics Group - a leading provider of integrated holistic solutions based on unmanned systems platforms, payloads and communications for defense and HLS applications - is to unveil the Orbiter 4 system with a flexible VTOL capability.

The VTOL kit provides superior mission capabilities and offers maximum flexibility for all-terrain mission success. The operational forces will, for the first time, be able to adjust the Orbiter 4 for optimal mission profiles whenever and wherever required. The operator can select whether to take-off and land the UAS using a traditional Orbiter 4 (launcher and parachute) and to benefit from outstanding endurance of 24 hours, or to attach the VTOL kit for accurate take-off and landing with reduced endurance.

"One of the most important needs in the modern battlefield is the ability to operate systems flexibly, depending on changing conditions," says Matan Perry, Chief Marketing Officer and VP Sales at Aeronautics. In response to this need, we have developed the Orbiter 4 VTOL kit. Our goal was to keep the superior advantages of the Orbiter 4 as the most advanced UAS in its segment while adding extra flexibility and more autonomy to field personnel.

About Orbiter 4:

Measure for measure, Orbiter 4 delivers higher capabilities than other tactical platforms in operation today, with greater endurance, serviceability, operational flexibility and cost-effectiveness. An advanced tactical UAS, multi-mission platform with versatile payloads, optional BLOS operation and extraordinary endurance for all weather conditions, it retains the legacy capabilities of the combat-proven Orbiter UAS family. Suitable for both land and maritime operations, the system can simultaneously carry multiple payloads, extending its ISTAR capabilities. Easy to use, with a low logistical footprint and a small crew, the runway-free Orbiter 4 STUAS aircraft suits all operational needs.

Eurosatory 2022: SMARTSHOOTER unveils another member of the SMASH Familyv

SMARTSHOOTER, a world-class designer, developer, and manufacturer of innovative fire control systems that significantly increase the accuracy and lethality of small arms, will present the SMASH X4, a Fire Control System with a x4 magnifying optic scope, at the Eurosatory exhibition in Paris from 13th June.

SMASH X4 combines a x4 magnifying optic scope with SMARTSHOOTER's SMASH unique fire control capabilities, thus providing extended detection, recognition & identification ranges for the shooter as well as extended lethality ranges. The SMASH X4 also includes an etched reticle to allow shooting without battery power. An optional integrated Laser Range Finder (LRF) enables range measurement both as a user-initiated capability as well as a system input for improved precision. Night-capability is also available by using the X4 with thermal night vision devices as a clip-on.

SMARTSHOOTER approves that it has recently completed the delivery of thousands of additional SMASH systems for the IDF and other customers. Deployed and combat-proven, the SMASH family of fire control systems lock on target and ensure precise target elimination of ground, aerial, static or moving targets during day and night operations. Equipped with an onboard computer to perform complex targeting solutions, SMASH enables superior situational awareness and can be operated as a stand-alone solution as well as combined with other systems to provide an effective multi-layer defense solution.

The company will present its range of solutions at Eurosatory, including:

· Handheld operated solutions such as the SMASH X4, SMASH 3000, SMASH 2000 plus and SMASH AD.

· Remotely controlled solutions such as the SMASH Hopper, a Light Remotely Controlled Weapon Station (LRCWS) that can be mounted on different manned and unmanned platforms.

·SMASH Dragon: a lethality payload for small UAVs.

Michal Mor, SMARTSHOOTER CEO: "Handheld operated, remotely controlled, robotic or UAV mounted, the SMASH technology provides a multi-applicative capability and enables the platoon to be smart, precise and connected. The SMASH family of products can be provided separately as stand-alone solutions or in various combinations explicitly tailored to each customer's operational needs and tactical scenarios. By combining advanced augmentation display with connectivity to sensors, C4I systems and other SMASH solutions, the SMASH technology enhances the force's situational awareness and lethality." ■

Rostec to start serial production of Okhotnik heavy attack drones in 2023

Russia to launch serial production of the Okhotnik (Hunter) heavy strike drone in 2023, Rostec CEO Sergei Chemezov said Wednesday at a meeting with President Vladimir Putin. The Okhotnik features a flat nozzle thruster that makes it less visible for radars

The serial production of the Okhotnik (Hunter) heavy strike drone will begin in 2023, Head of the state tech corporation Rostec Sergey Chemezov said at a meeting with Russian President Vladimir Putin on Wednesday.

"The first flying prototype was rolled out in 2021 and we will begin serial-producing and delivering it to the Defense Ministry in 2023," Chemezov said.

As its specific feature, the Okhotnik features a flat nozzle thruster that makes it less visible for radars, the Rostec chief stressed.

"Also, a new ground control post is being created for the drone," he said.

The S-70 Okhotnik drone developed by the Sukhoi Design Bureau features stealth technology and the flying wing design (it lacks a tail), which diminishes its radar signature. According to the data of open sources, the drone has a take-off weight of 20 tonnes and can accelerate to roughly 1,000 km/h.

The Okhotnik heavy attack drone performed its debut flight on August 3, 2019. The flight lasted over 20 minutes under an operator's control. On September 27, 2019, the Okhotnik performed a flight together with a Su-57 fifth-generation fighter jet. The drone maneuvered in the air in automated mode at an altitude of around 1,600 meters and its flight lasted over 30 minutes.

■

IAI to Unveil New Land Capabilities at EUROSATORY

Israel Aerospace Industries (IAI) will unveil several new technologies and capabilities in the land domain at the Eurosatory defence exhibition in Paris from 13-17 June. IAI will utilize this global platform to strengthen existing partnerships and forge new cooperation.

IAI will exhibit a variety of its holistic land Systems of Systems, focused around up-to-date increased Situational Awareness, Survivability, and Lethality. Combining advanced technologies, platforms and AI, the systems identify threats, employ active and passive defense measures, and conduct operations in real time by both manned & autonomous methods. IAI's booth will display a variety of systems, including the Barak MX Air and Missile Defense System, REX MK 2 unmanned land system, Tactical Heron Unmanned Aerial System (UAS), ROTEM and MINI HAROP loitering munitions, ELI-2139 Tactical Multi-Mission Multi Sensor System, among others. Join IAI at Booth #D698 to learn more.

Boaz Levy, IAI President and CEO: "IAI looks forward to participating in the iconic EUROSATORY exhibition and unveiling new technological capabilities that will be a game-changer on the future battlefield. Showcasing our cutting-edge technologies at the exhibition provides an opportunity to expand our partnerships with the European market.

In recent years, IAI has supplied its industry-leading ground based air defense systems, robotic systems, UAV's, border protection systems, intelligence systems and more to a number of European countries.

We are proud of the trust our partners and customers have shown towards our products, developed based on IAI's extensive experience and heritage.

We look forward to continuing developing advanced technologies and sharing our new capabilities and solutions."

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The Environmental Control Systems and Their Innovations

Cooling devices have first appeared with the industrial revolution and the rise of machines which needed to be cooled in order to work effectively. Since then, cooling techniques have transformed tremendously reflecting the needs of swift technical development.

The evolution of environmental control systems

The history of air-cycle-based environmental control systems dates back to the late 19th century when it was first used on board ships or by food producers and retailers to cool food. Using the vapor-cycle refrigeration was hazardous as the refrigerants were jeopardizing the operations of boats. Instead, first-time ever, mechanical air-cycle refrigeration was used. Unfortunately, the success didn´t last long as the vapor cycle cooling method was more efficient at the time. The air-cycle refrigeration saw its comeback in the 1940s due to it being a lightweight and compact solution to cool the aircraft cabins. Ever since, the air-cycle environmental control systems have been dominating the aviation industry.

PBS has 50 years of profound experience with environmental control systems since its first delivered ECS systems in 1972 for the exceptionally successful L-39 jet trainer produced by AERO Vodochody. A total nearing 4 500 ECS were produced for the trainer and its modifications. A strong partnership was built between PBS and AERO Vodochody during those decades, so when the next-generation L-39NG trainer was being developed, PBS´s expertise, customer approach, and ability to provide custom-made solutions lead to a straightforward choice. The technology of ECSs on both legacy and next-generation trainers is a powerful simple cycle air-cycle machine.

Current Approach To Development

Although powerful and custom-made

solution for L-39NG, the simple cycle technology has its limits when it comes to the amount of bleed air intake. A completely new approach to ECSs was needed to develop a next-generation system for use in modern aircraft and helicopters and future technology programs. Current PBS´s next-generation ECS is packed with state-of-the-art technology. Major remodeling saw the turbocooling unit which went from simple cycle to a 3-wheel bootstrap technology, the heat exchangers were swapped from shell & tube type to plate-fin heat exchangers, and last (but not least), the turbocooling unit is equipped with air foil bearings. In addition, the system is equipped with a condenser, reheater, and a high-pressure water separator. All these upgrades create a super-efficient, extraordinarily reliable system with lower energetic requirements.

What the future holds

Future, without any doubt, will demand technologies and all processes which will aim to have a zero-carbon footprint. With that being said, the systems based on vapor cycle technology, i.e., refrigerants, pose a great threat to ozone depletion and global warming, leading to stringent legislation and even more rigorous regulations promoting low-emission to zero-emission technologies. On the other hand, air-cycle machine technology works with air as a working medium and as such represents a perfect eco-friendly solution. PBS is truly committed to lowering the impact on the environment by consciously alternating all processes in development, production, and testing to be carbon-neutral. Apart from its environmental advantages, the working medium is free of charge making the air-cycle-based system's operations cheaper than the vapor cycle-based system. Modern systems are more often built on powerful avionics and reliable delivery of cooling air is a must. Air-based systems have one more major advantage (apart from many others) taken by PBS to a whole another level – easily up to 40 years of worry-free lifespan and minimal maintenance requirements.

PBS ECS solutions are applicable in all sorts of platforms including civil and military helicopters, jet trainers, fighter jets, or eVTOLs. PBS´s capabilities and future development is not limited only to the aforementioned platforms but is rather open to future challenges such as cooling other platforms reacting to MEA technology, powerful avionics or separate sensors located in missiles, pods, or UAVs that need to be cooled to maintain proper performance. Especially with MEA technology, the future might possibly lie in the intake of ram air instead of bleed air approaching a clean sky initiative in a smart way.

Manufacturing powerful, yet reliable systems has earned PBS a reputation of a renowned, trustworthy, and honest engineering company delivering state-of-the-art quality products ranging from aerospace, precision casting, and power engineering to cryogenics research. Although being a large holding company, PBS approaches each client with a customer-first mindset creating tailor-made solutions according to the client´s needs. We believe in building lifetime partnerships with our clients to make a better future. ■

Record turnover for BEML in 2021-22

BEML Ltd has achieved its highest-ever turnover of Rs 4,143 crore during financial year 2021-22, against the previous year's Rs 3,557 crore.

According to a statement of the company's standalone and consolidated audited results for 2021-22 released by Chairman and Managing Director Amit Banerjee, BEML also recorded the highest-ever value of production of Rs 3,993 crore during the financial year. The figure for the previous financial year was Rs 3,556 crore, the CMD added.

"This was achieved despite challenges posed by COVID-19 pandemic and resultant supply chain disruptions," the statement said.

Meanwhile, the profit before tax of the company having its registered office at Bengaluru has grown to Rs 206 crore in 2021-22 from Rs 93 crore in 2020-21 and profit after tax stands at Rs 135 crore in 2021-22 against Rs 75 crore in 2020-21.

The CMD also revealed that the company's order book as on March 31, 2022 stood at Rs 9,192 crore. During 2021-22, BEML exported products to a new country, Madagascar, adding to its list of exports to 68 countries.

Major milestones achieved during 2021-22 include successful commissioning of 190 T electric dump trucks at NCL Singrauli, supply of 81 numbers of medical oxygen plants by standing with the nation to tide over the COVID- 19 pandemic and flagging off MRS 1 Driverless Metro Cars for Mumbai Metro. ■

Get Skilled and Enhance Capability

Aerospace & Aviation Sector Skill Council

AASSC Overview & Mandate:

Aerospace and Aviation Sector Skill Council (AASSC) https://www.aassc.in/ has been set-up under the Government led initiative of "Skill India" program. This is one of the 37 Sector Skill Councils formed under National Skill Development Corporation (NSDC) https://nsdcindia.org/. The promoters of the company are Hindustan Aeronautics Limited (HAL), Bangalore Chamber of Industries & Commerce (BCIC) and Society of Indian Aerospace Technologies & Industries (SIATI).

AASSC is responsible for bridging the skill gap and acts as an Awarding Body for short-term skilling programs, mostly 2 to 4 months in the aerospace and aviation sector. It ensures delivery of well-designed industry centric curriculum aligned to National Skill Qualification Framework (NSQF) through a pan-India network of accredited Training Partners and Assessment Agencies. It also conducts Training of Trainers (ToT)/ Assessors (ToA) programs for new trainers & assessors.

The list of job roles can be accessed at https://www.aassc.in/wp-content/uploads/2020/04/List-of-AASSC-72-Job-Roles-5-subsectors.pdf Some of the benefits to the aspirants are Diverse employability opportunities, Upskilling & reskilling for career growth and Certification for transnational mobility.

List of the Job Roles developed under Aerospace & manufacturing Sector are listed below:

Aerospace Conventional Machinist	Aerospace Lab Technician - NDT
Aerospace Composites Technician	Aerospace Pipe Bending and Fitting Technician
Aerospace Sheet Metal Technician	Aerospace Finishing Process Technician
Aerospace Welder	Aerospace CNC Programmer
Aerospace Avionics Technician	Aerospace CNC Machinist
Aerospace Foundry Technician	Aerospace Plastics Forming Technician
Aerospace Forging Technician	Aerospace Structural Fitter
Aerospace Lab Technician Destructive Testing	Aerospace Electrician
Aerospace Tool & Die Technician	Aerospace Precision Mechanical Assembly Fitter
Aerospace Jig and Fixture Technician	Aerospace ECS (Environmental Control System) Technician
Aerospace Flight Control Technician	Aerospace Fuel & Hydraulic Technician

How to Get Skilled?

There are presently a total of 91 Training Centres (TCs) accredited with AASSC. To find the training partners under AASSC follow the link https://tinyurl.com/yc7tpbd3. A candidate has not only a wide choice of job roles to choose from but also has a variety of paths to acquire skills. They must register themselves on this link https://skillindia.nsdcindia.org/candidate-registration/registration

Recognition of Prior Skill (RPL)

AASSC also assesses and certifies previously acquired experience and skills with a Recognition of Prior Skill (RPL) certification. This will help an aviation aspirant to align themselves with NSQF and enter a formal skilling and employment arena with confidence.

Apprenticeship Program

AASSC also encourages apprenticeships among aerospace & aviation companies under a scheme called National Apprenticeship Promotion Scheme (NAPS) https://apprenticeshipindia.org/ to create a ready pipeline of skilled workforce for future employment.

Accreditation Process for a Training Partner (Who seeks to implement Govt Funded skill programs):

The detailed process of accreditation of a Training Partner (TP)can be accessed through the link: https://skillindia.nsdcindia.org/. A snapshot with cost associated in the whole process is as below:

Accreditation Process Cost	
Item	Cost in INR
TP registration	10,000
Form submission	3,000
Physical inspection	10,000 + 1,000 per job role
Accreditation charges	8,000
Affiliation per job role	6,000 per job role
Total	31,000+ 7,000 per job role

Trainer & Equipment Cost	
Item	Cost in INR
ToT/ ToA fees	11,000 per trainer
NIESBUD certification	6,000 per trainer
Aadhaar Biometric	10,000
AASSC EoI charges	5,000
Total	15,000+ 17,000 per trainer

Accreditation Process for a Training Partner (Who seeks to implement only Fee-Based/ CSR Funded Skill Programs):

For direct affiliation with AASSC, contact

CEO, AASSC by dropping a request proposal on ceo@aassc.in

Partnership & Funding available for Training Organizations, Corporates, Not-for–profits, Universities or Educational Institutes, ITI:

NSDC Partnership-Value Proposition

Social Benefits	Commercial benefits	Enabling support
Contribution to Skill India Mission	Access to concessional and patient capital pool of Government of India	Access to the Skill India Portal for data reporting and robust monitoring system of NSDC
Accreditation and Co-branding of training institutes with NSDC	Improved financial leverage on promoter's capital contribution	Access to NSDC led initiatives like- World Skills Championship, NAPS, Digital Skilling
Certification of trainees by GoI recognized Sector Skill Councils (SSC)	Viability gap funding for 3 years	Access to the CSR fund pool mobilized by NSDC
Transition and mainstreaming of programs to National Occupational Standards (NOS)	Improved margins	Industry linkages for internship and placements of certified trainees
Ease of access to other scheme-based efforts of Central/State Govt and Corporate supported initiatives in skill development		Communication and Advocacy ...

NSDC Funding Partnership-Key Highlights

Who Gets Funded*?

- Entities with positive net worth and sustainable business in past 5 years
- Initiatives in fee-based model
- Including start ups/SMEs/NGOs

Amount of Funding

- Up to 75% of the project cost (85% of the project cost for Not-for-Profit Institutions) (excluding acquisition of land/building)

Form of Funding?

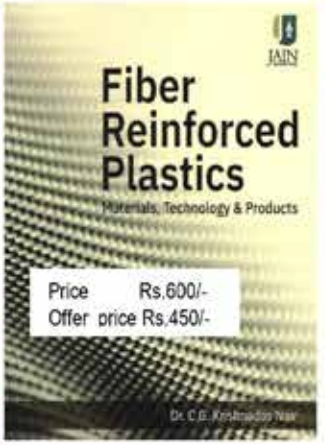
- Debt** at subsidized rates (6% p.a.), further lower rates for underserved sectors/geographies
- Longer door-to-door tenure (up to 7 years), principal moratorium (up to 3 years)
- Equity (Very select cases)
- Grant funding (for SSC and only in very select special cases – up to 10% of the project cost)
- Non-funding partnership also possible for select entities for market led programs

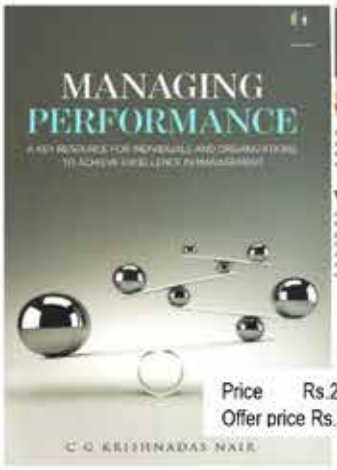
Is There Special Focus?

- NSDC is looking to fund businesses that seek to create employable people across all sections of the society – including Rural sectors
- Sector agnostic – our partners skill everybody from artisans to construction workers to entrepreneurs
- Interest rate benefits for select sectors and geographies as detailed in the Funding Guidelines

THE UNDERMENTIONED BOOKS AVAILABLE @ 25% DISCOUNT

Contact : Mr N Gopalakrishnan at SIATI Office, Mob: 9663822386 E-mail: Office@siati.org

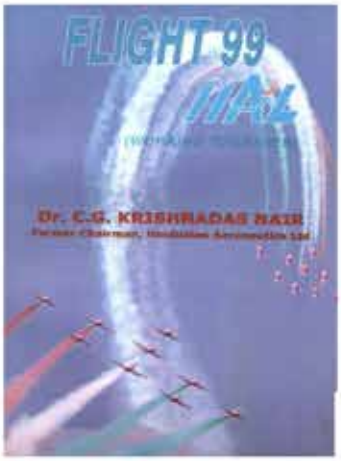


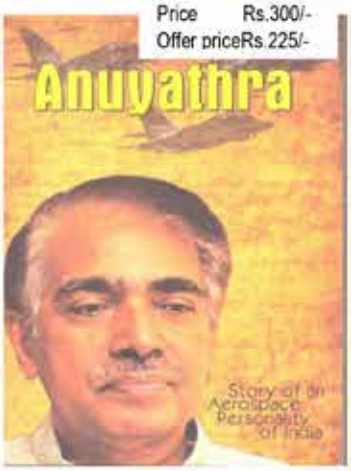


Ethics – Dr.Nair a role model

Dr.Nair is an Engineer and technologist, leader and manager, scholar and teacher, visionary with a mission, a good speaker and an author and was a CEO of one of the largest hi-tech PSU. In spite of such achievements and admiration from all, he walks about as if he is nobody, adorning himself with a simple lifestyle and humility. Destiny gave him a happy combination of attributes, in the right proportion. Such a blend of noble attitudes and attributes is rarely found among technologists and managers. An orchestra of several instruments gives a pleasant effect and impact on the audience. Dr.Nair's skill rise to the occasion to meet difficult situations, solve problems, take decisions and promote good human relationships. The significance of his profound contributions in the present Indian and global context can be appreciated on how ethical approach can save Mother Earth and her endowments as well as promote inter-personal relationship and human values.

Prof. N.S.Ramaswamy
Founder Director, *Indian Institute of Management, Bangalore*





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