फरवरी
February
2023

खंड/Vol. : 48 अंक/Issue : 36

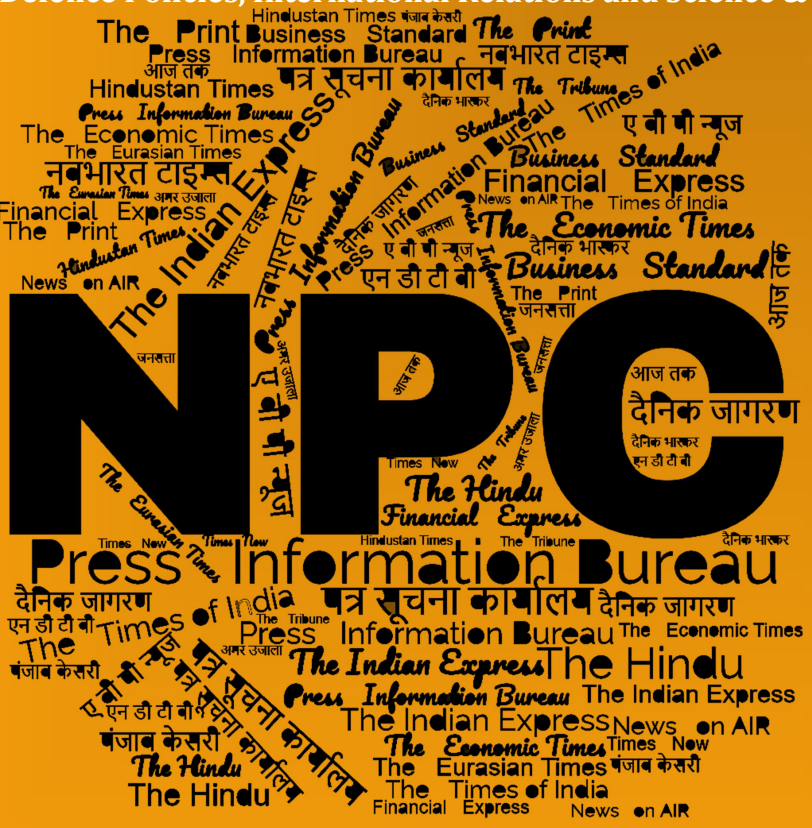
21/02/2023

समाचार पत्रों से चयित अंश

Newspapers Clippings

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

A Daily service to keep DRDO Fraternity abreast with DRDO Technologies, Defence Technologies, Defence Policies, International Relations and Science & Technology



रक्षा विज्ञान पुस्तकालय
Defence Science Library
रक्षा वैज्ञानिक सूचना एवं प्रलेखन केंद्र
Defence Scientific Information & Documentation Centre
मेटकॉफ हाउस, दिल्ली - 110 054
Metcalfe House, Delhi - 110 054

CONTENTS

DRDO News

DRDO Technology News

Mon, 20 Feb 2023

DRDO, Adani Partner to Manufacture D4 C-UAS

The Defence Research and Development Organisation (DRDO) has partnered with Adani Defence and Aerospace to manufacture its Drone Detect, Deter, and Destroy (D4) counter-unmanned aircraft system (C-UAS), a company official told Janes at the Aero India 2023 show, which was held in Bangalore from 13 to 17 February.

The technology transfer has been completed, and Adani has started manufacturing the D4 C-UAS, the official said.

The D4 C-UAS has been demonstrated to various services and security agencies under the Ministry of Defence (MoD) and the Ministry of Home Affairs (MHA), the official added. Janes understands that the DRDO and Adani have secured contracts from these agencies/services.

The C-UAS has also been deployed at various government events involving top-level dignitaries, the official said.

The D4 C-UAS has automatic detection, classification, and neutralisation capabilities both at day and night. It can also be operated manually.

The system can be operated in a stationary mode as well as from mobile vehicles. It is also portable.

The D4 C-UAS includes an X-band radar, with a detection range of 4 km for micro unmanned aerial vehicles (UAVs). The radar has an azimuth coverage of 360°, and an elevation coverage of 50°. The C-UAS can detect radio frequencies of UAVs – operating at 400–6,000 MHz – up to a range of about 3 km.

The electro-optical/infrared (EO/IR) system of the C-UAS has a detection range of up to 3 km. It comprises a laser rangefinder (LRF), and is available in both cooled and uncooled configurations.

https://www.janes.com/defence-news/news-detail/aero-india-2023-drdo-adani-partner-to-manufacture-d4-c-uas

FINANCIAL EXPRESS
Read to Lead

Mon, 20 Feb 2023

India's Major Drone Projects to Boost Armed Forces' Capabilities

The Defence Research and Development Organisation (DRDO) and Hindustan Aeronautics (HAL) are gearing up to boost drone capabilities for the Indian armed forces. We take a look at some of the key projects which are under development.

TAPAS-BH

Tapas-BH is the answer to India's quest for ISTAR (Intelligence, Surveillance, Target Acquisition, Tracking, and Reconnaissance) requirements. TAPAS-BH is a Medium Altitude Long Endurance (MALE) UAV with an operating altitude of 30000 ft, and an endurance of 24 hours. By definition, TAPAS promises the integration of the highest-grade military EO Electro-Optical (EO) and Synthetic Aperture Radar (SAR) payloads. That will improve the images dramatically for the ISTAR range of operations for the military across the terrain. TAPAS-BH also projects a range of 250 km which can carry a variety of payloads up to a maximum of 350 kg. However, it is based on the Rustom-2 platform which has been originally conceptualized and designed to perform Intelligence, Surveillance, and Reconnaissance missions for the Indian armed forces. In addition to that RUSTOM drones will use Indian GPS GAGAN (GPS Aided Geo Augmented Navigation) developed by ISRO. The DRDO has defined its wide area coverage which can detect and be able to identify small targets. Rustom-II is comparable in the same class as Israel Aerospace Industries' HERON.

Archer-Next Generation (NG)

An advanced version of the UAV named Archer is another project in the pipeline which will be a weaponised drone. Archer is another attempt to improve the capabilities in terms of endurance and payload capacity. It has a line-of-sight range of 250 Km and Beyond Line-of-Sight (BLoS) up to 1000 km. Primarily, Archer NG is defined for the ISTAR missions, artillery fire corrections and battlefield post-strike assessment. The Archer NG is now equipped with a single-engine system. The realization of the UAV through the development cum production partner (DcPP) is in progress. According to the DRDO, maiden flight trails are planned for July 2023.

Short Range-UAV-Weaponized

The DRDO has made another version of the Archer — a basic weaponised Archer– which is defined as Short Range-Unmanned Aerial Vehicle-Weaponised (SR-UAV-W).

The short-range Archer has undergone flight demonstration and will undergo missile evaluation soon. The Archer will undergo missile evaluation trials. "If the trials are successful, the army and the paramilitary forces could induct these," a DRDO official said.

Remotely Piloted Aircraft Systems (PRAS)

Finally, DRDO has come up with High Altitude Long Endurance (HALE) Remotely Piloted Aircraft Systems, covering the full spectrum of ISTAR. The Aeronautical Design Establishment

of DRDO has jointly completed the feasibility studies with Hindustan Aeronautics in line with the armed forces.

The PRAS will be equipped with a turboprop (940 HP) powerplant. Significantly, the PRAS will surpass the load capacity of 2000 kg and it can fly at an altitude of 35,000 ft.

The PRAS has completed 65 flights and demonstrated flight endurance of 10 hours. It has a range of 200 km. Besides, it has Automatic Take-off & Landing (ATOL), Synthetic Aperture Radar (SAR) and Store carrying capability.

DRDO's drone, detect, deter, and destroy (D4)

The D4 is the latest of the systems which DRDO is focusing on. The D4 drone system is capable of destroying micro drones by jamming the command-and-control links and further damaging the hardware of the drones. The DRDO has defined its range as up to 4km.

The system works on the counter techniques of either hard or soft kill. One of the unique features of the D4 is that the system instantly detects and jams micro drones.

https://www.financialexpress.com/defence/indias-major-drone-projects-to-boost-armed-forces-capabilities/2986874/

Defence News

Defence Strategic : National/International

Press Information Bureau
Government of India

Ministry of Defence

Mon, 20 Feb 2023

Indo-Uzbekistan Joint Military Exercise 'DUSTLIK' Commences at Pithoragarh (Uttarakhand)

The 4th edition of joint military exercise 'DUSTLIK' between the Indian Army and Uzbekistan Army commenced today in Foreign Training Node, Pithoragarh (Uttarakhand). 45 Soldiers each from Uzbekistan and Indian Army are participating in this exercise which is aimed at promoting positive relations between both the armies. The Indian Army contingent comprises of troops from an Infantry Battalion from the Garhwal Rifles Regiment. The first edition of the exercise was held at Uzbekistan in November 2019. The 14 days long joint exercise would focus on joint counter-terrorist operations in mountainous and semi-urban scenario under UN mandate and will include field training exercises, combat discussions, lectures, demonstrations and culminate with a validation exercise. Both sides will jointly train, plan and execute a series of tactical drills for

neutralisation of likely threats, while learning to exploit new generation equipment and technology for conducting joint operations. Due emphasis is being laid on increasing interoperability between forces.

The bonhomie, espirit-de-corps and goodwill generated during the exercise will go a long way in further strengthening the bonds between both armies by enabling understanding of each other's organisation and methodology of conducting various operations.

https://www.pib.gov.in/PressReleasePage.aspx?PRID=1900754

Mon, 20 Feb 2023

Munitions India to Supply Multimode Hand Grenades to Indian Army

Munitions India Limited (MIL) has received an order for one million multimode hand grenades for the Indian Army, the state-run company has confirmed to Janes.

Shailesh Vagerwal, the general manager of MIL, said that under the order MIL has produced an initial 100,000 grenades for the Indian Army and that supplies of these weapons started in fiscal year (FY) 2022–23.

He added that MIL is awaiting clearance from the Indian Army to produce the remaining grenades under the contract. All the grenades are being manufactured at the Ordnance Factory Khamaria, which is a factory of MIL in Jabalpur, Madhya Pradesh.

The multimode hand grenades, which were displayed at MIL in Aero India 2023, were designed and developed by Defence Research and Development Organisation's (DRDO's) Terminal Ballistics Research Laboratory (TBRL).

The hand grenade is available in defensive and offensive modes. When used in an offensive role, the grenade comprises a fuze unit with fly-off safety lever and an explosive-filled, non-fragmenting body. A removable fragmentation sleeve is added for use in the defensive role.

According to Janes Weapons Ammunition, the grenade is filled with 100 g Research Department eXplosive/Trinitrotoluene (RDX/TNT) as the main explosive filling, with steel balls embedded around the inner walls of the grenade body.

The grenade produces approximately 4,000–4,500 fragments distributed at a radius of 8–10 m from the point of explosion. In an offensive role, the result is primarily a proximity blast, but without fragments.

https://www.janes.com/defence-news/news-detail/aero-india-2023-munitions-india-to-supply-multimode-hand-grenades-to-indian-army

THE HINDU

Mon, 20 Feb 2023

Philippine Navy Personnel Trained on BrahMos Cruise Missile Systems

As part of the $374.96 million deal for BrahMos supersonic cruise missiles, 21 Philippine Navy personnel were awarded their interim missile badges by Indian Navy Chief Adm. R. Hari Kumar as they completed Operator training of the shore-based BrahMos supersonic cruise missiles system. The training was held in Nagpur and the deliveries would begin next year, a defence source said.

"Said training that ran from January 23 to February 11, 2023 focused on the operations and maintenance of some of the most important logistics package of the Shore-Based Anti-Ship Missile System (SBASMS) that will be delivered to the Philippines," Philippines Marine Corps (PMC) said in a message posted on its Facebook page.

The deal signed in January 2022 includes the delivery of three Missile batteries, training for operators and maintainers as well as the necessary Integrated Logistics Support (ILS) package. The coastal defence regiment of the PMC will be the primary employer of missile systems.

"The induction of the BrahMos missile into the Philippine Marine Corps will strengthen your maritime capability and will also contribute to our collective maritime security within the region... I sincerely hope that you'll always cherish the bonds of friendship you had during your stay here," the PMC statement quoted Adm. Kumar as having said at the valedictory ceremony.

The said acquisition was viewed as a boost to the Philippine Navy's capability to defend the country's maritime borders and will further complement the efforts of the PN surface assets in patrolling the Philippine waters, the statement said.

At the signing ceremony, Defence Secretary of Philippines Delfin N. Lorenzana said that equipping their Navy with this "vital asset is imperative as the Philippines continues to protect the integrity of its territory and defend its national interests".

As reported earlier, there is interest in acquiring BrahMos missiles from several countries with discussions in advanced stages with Indonesia and Thailand. India and Russia had long agreed on a negative export list for sale of the missile.

BrahMos is a joint venture between DRDO and Russia's NPO Mashinostroyeniya and the missile derives its name from Brahmaputra and Moskva rivers. The missile is capable of being launched from land, sea, sub-sea and air against surface and sea-based targets and has been long inducted by the Indian armed forces.

The range of the missile was originally capped at 290 km as per obligations of the Missile Technology Control Regime (MTCR). Following India's entry into the club in June 2016, officials said the range would be extended to 450 km and to 600 km at a later stage. The extended range missile has been tested several times in recent times.

https://www.thehindu.com/news/national/philippine-navy-personnel-trained-on-brahmos-cruise-missile-systems/article66532283.ece

INDIA TODAY

Mon, 20 Feb 2023

Indian Army to get 2 Air Defence Systems to Fight Enemy Aircraft, Drones

The Indian Army is going to add two different types of very short range air defence systems to bolster itself against China in the high-altitude mountains.

The defence ministry cleared the acquisition of a very short range air defence for the Army to protect the Indo-China border against the enemy, aircraft and drones flying in the area.

The first type of Very Short Air Defence System will be shoulder-fired and will be made under the "Make in India" initiative where foreign companies are likely to partner with Indian firms. This contest could see the participation by French firm Thales and Bharat Dynamics Limited along with Saab from Sweden. The type of system will be tripod-based and developed by DRDO, which has developed this system in partnership with its development-cum-production partner model and will see the involvement of the private sector in a big way.

https://www.indiatoday.in/india/story/indian-army-to-get-2-air-defence-systems-to-fight-enemy-aircraft-drones-2337362-2023-02-20

The Indian EXPRESS

Mon, 20 Feb 2023

Takeaways from Aero India 2023

Over 200 agreements worth around Rs 80,000 crore were signed during the 2023 edition of Aero India, India's biggest aviation exhibition, that ended on Friday. Some 800 defence companies took part in the show, 700 of which were Indian.

More than 80 countries were present at the five-day event, at which India sought to sharpen its self-reliance message, and made export pitches for indigenous military platforms, equipment and weapon systems to several participating countries.

Defence Minister Rajnath Singh addressed defence ministers and deputy defence ministers from 27 countries at the Defence Ministers' Conclave on the sidelines of the event.

Companies from Russia, the US, UK, France, Israel, and Brazil also displayed their military platforms and weapon systems at the show.

Russia measured, US very visible

Russia, which has been at war for almost a year now, registered its usual measured presence at the exhibition — with Rosoboronexport, United Aircraft Corporation, Almaz-Antey Air, and Space Defense Corporation putting up stalls.

Rosoboronexport exhibited armaments and military hardware, including the fifth-generation Su-57E multirole fighter, Checkmate light tactical aircraft, IL-76MD-90A(E) military transport aircraft, and Su-35, Su-30, and MiG-35D fighter aircraft, besides a range of military helicopters, UAVs, anti-drone systems, and air defence systems.

However, none of these aircraft was flown in to participate in the aerial demonstration.

The United States, by contrast, had a high-voltage presence, with its leading defence companies and largest-ever delegation, and through aerial demonstrations and static displays of its latest aircraft. The US government put up a debut display of two fifth-generation fighters being used by its air force — the supersonic F-35A Lightning II and F-35A Joint Strike Fighter multirole jets. Two B-1B Lancer bombers flew — the second visit of the aircraft to the biennial show.

Companies such as Aero Metals Alliance, Astronautics Corporation of America, Boeing, GE Aerospace, General Atomics Aeronautical Systems Inc, Hi-Tech Import Export Corporation, Jonal Laboratories, Kallman Worldwide, Lockheed Martin, Pratt & Whitney, and TW Metals LLC displayed a range of offerings.

Lockheed Martin presented the F-21 fighter, C-130J transport aircraft, MH-60R "Romeo" multi-mission helicopter, JAVELIN weapon system, and S-92 multirole helicopter.

Earlier this month, the Ministry of External Affairs had said the US was reviewing a licence application from engine manufacturer General Electric (GE) to jointly produce jet engines for the indigenous Light Combat Aircraft (LCA) Tejas Mk2 and the Advanced Medium Combat Aircraft (AMCA), which are currently under development.

Behind the large US presence

The large US delegation and the decision to fly in their latest aircraft carry a strategic and geopolitical signal. The bulk of India's military equipment is from Russia, which is under Western sanctions due to the war in Ukraine — and the US would like to wean India away from its dependence on Moscow, and to woo the Indian military establishment through partnership opportunities in defence projects.

While an F-35 stealth aircraft gave an aerial demonstration during the event, there was no word from the US on whether it is looking to offer the jet to India, which is working on its own fifth-generation AMCA.

India has been seeking to expand its defence import basket in recent years — among its big-ticket purchases are the Rafale fighters from France, and Chinook and Apache helicopters, M777 lightweight howitzers, and SiG-Sauer rifles from the US. India's indigenous aircraft carrier Vikrant is powered by American GE Marine engines.

However, India also has bought the S-400 surface-to-air missile system from Russia and has set up a joint venture with Russia at Amethi in Uttar Pradesh to make AK-203 rifles.

UK, France, and Israel

Several British, French, and Israeli defence companies pitched a range of equipment and partnerships to the Indian military.

The UK Minister for Defence Procurement Alex Chalk led a delegation of government and military representatives and the defence industry, including manufacturing giants such as Rolls Royce, BAE Systems, MBDA UK, and Collins Aerospace.

While Rolls Royce is looking to design and develop engines for the AMCA in the future by sharing of the IP, BAE Systems said in a statement that it would work with the Bangalore-based technology group NewSpace Research and Technologies to explore opportunities for collaboration in next-generation uncrewed systems and associated technologies.

Israel Aerospace Industries showcased models of the Heron Mk 2 and Heron TP UAVs — the former is already in use with the Indian armed forces. It also entered into an agreement with Bharat Electronics Limited to produce the LORA (long-range artillery) surface-to-surface missile system in India. HAL and Israel's Elta Systems Limited signed an agreement for cooperation on future business in Maritime Patrol Radar (MPR) for Indian platforms.

Among the French firms present at the event were Dassault Aviation — which showcased the Rafale and its marine version, and the Falcon 2000 aircraft — and Safran. HAL and Safran Helicopter Engines signed an agreement for work share to form a joint venture for design, development, manufacture and lifetime support of helicopter engines. The Swedish aerospace and defence company Saab was present to pitch its advanced fighter aircraft Gripen E for India's multirole fighter aircraft (MRFA) programme. Brazil's Embraer showcased the C-390 Millennium as a potential replacement for the IAF's AN-32 transport aircraft.

India's export pitch

With India pushing its self-reliance plans, including earmarking 75 per cent of the capital budget for 2023-24 for domestic procurements, almost all foreign companies spoke about the Make in India programme, and joint development and co-production in India.

Among the 700 Indian companies at the event was a range of startups displaying niche technologies and innovative solutions for the military.

During the inaugural ceremony, Prime Minister Narendra Modi said India will target an increase in defence exports to $5 billion by 2024-25 from the $1.5 billion at present.

India is in talks with several countries, including Argentina and Egypt, to sell the LCA Tejas, the Advanced Light Helicopter (ALH), and the BrahMos supersonic cruise missile. In the future, India will also look at exporting the indigenous HTT-40 training aircraft, the Light Utility Helicopters, and the Light Combat Helicopter (LCH), alongside the Mk2 version of the LCA Tejas.

https://indianexpress.com/article/explained/explained-defence-takeaways-from-aero-india-8455175/

Business Standard

Mon, 20 Feb 2023

Govt to Plug Gaps in Engine Tech Expertise, Lines up Buys Worth Rs 1.5 trn

By Ajai Shukla

The Ministry of Defence (MoD) has discerned a gap in Indian self-reliance in the fields of aeronautical, marine and land systems engines. Statements from senior Indian officials, and a

growing number of tie-ups between Indian defence firms and foreign original equipment manufacturers (OEMs) on engines points to a growing focus on this field.

Addressing a seminar at Aero India 2023 on February 14, Defence Minister Rajnath Singh said it was time to ensure that Indian aircraft fly with indigenously-developed engines.

"The MoD is working on the details of indigenous manufacturing of aero-engines to provide a new fillip to the aerospace sector and achieve complete self-reliance," Singh said at the seminar.

Over the coming decade, India's military is poised to buy close to a thousand engines for fighter aircraft alone — 228 engines for 114 multi-role fighter aircraft (MRFA), 83 engines for as many Tejas Mark 1A fighters, 126 for Tejas Mark 2 fighters, 294 engines for 147 twin-engine Advanced Medium Combat Aircraft (AMCA) and 117 engines for 57 twin-engine Multi-Role Carrier Borne Aircraft (MRCBF).

The rough cost of engines for each fighter aircraft amounts to 20-30 per cent of the ticket price of the fighter. An existing acquisition that provides an indication of the cost of such engines is a Rs 5,375-crore contract with General Electric (GE) for 99 GE F-404IN engines.

That puts the cost of each engine at Rs 55 crore. All the other engines are more modern, more powerful and therefore more expensive than the GE F-404IN engines. Assuming a rough cost of Rs 75 crore for each of those engines, the MoD's aero-engine purchase bill will amount to at least Rs 75,000 crore. Given the need for periodic overhauls and upgrades, its life cycle expenditure will comfortably double to Rs 1.5 trillion over the coming decade.

In addition to these are the hundreds of aero-engines needed for an anticipated fleet of unarmed airborne vehicles (UAV), which are the new face of war. UAV engines would be lighter and cheaper than fighter aircraft engines, since they are not required to power such high-performance aircraft.

The DRDO's first high-performance autonomous vehicle will be the Unmanned Combat Aerial Vehicle (UCAV). This banks on a positive outcome of the Kaveri engine project – which was the DRDO's unsuccessful bid for an engine for the Tejas. The Kaveri's 50 kiloNewtons (kN) thrust will suffice for the UCAV, but it does not have the performance and reliability to power the Tejas.

The first potential foreign OEM partner to have thrown its hat into the ring is British firm, Rolls-Royce, which has offered to partner the DRDO in designing and developing an engine for the AMCA, which will form the backbone of the IAF's fifth-generation fighter fleet in about a decade.

But for now, Rolls-Royce is alone in offering to co-develop a high-performance aero engine with Indian partners. The relationship with French firm Safran (earlier called Snecma) has been vitiated after four fruitless years of discussions on cooperating to uprate the Kaveri. Snecma was unwilling to share key technologies, such as those of single crystal blades and high temperature materials needed for the engine's combustion chamber.

The DRDO already has significant material technology, such as nickel alloys, that can withstand temperatures of up to 1,400-1,500 degrees Kelvin. These temperatures are created in the engine's "hot end", while generating 80-90 kN of power.

Nor does India have the facilities needed for developing advanced aerospace products. There is only one wind tunnel in the country, the almost six decade old one in the National Aeronautics

Laboratory. US engine makers, such as Pratt & Whitney and GE, were unwilling to share the IP that might result from a co-creation project. Washington and New Delhi were discussing co-development of a fighter engine under the Defence Trade and Technology Initiative (DTTI), but the American firms decided against sharing IP.

Other than Rolls-Royce, engine OEMs were interested mainly in maintenance repair and overhaul (MRO) of existing engines.

Godrej Aerospace announced on Monday that it had won an order for manufacturing eight modules of the DRDO engine for aerial applications. Godrej Aerospace beat out competition from 25 companies, owing to its proficiency in working with high temperature materials and decades of experience.

On February 13, GE signed a contract with Cochin Shipyard to provide a comprehensive digital solutions package to enhance the capabilities of the LM2500 marine gas turbines that power the Indian Navy's first indigenous aircraft carrier INS Vikrant.

On Wednesday, the Crown Group signed an MoU with Aniba Solution, to design and develop control systems for marine gas turbine engines for the Navy.

https://www.business-standard.com/article/economy-policy/ministry-of-defence-focus-on-creating-expertise-in-engine-technology-123022001170_1.html

THE HINDU BusinessLine

Mon, 20 Feb 2023

UK Keen to Offer Combat Air Programmes Customised to Indian Specifications, says Alex Chalk

The United Kingdom is to work on combat air programmes customised to Indian specifications which will enhance capabilities in core technology areas as well as strengthen comprehensive strategic partnership between the two countries.

UK Minister for Defence Procurement, Alex Chalk KC, told businessline at the just-held Aero India, . "We are committed to working with India to deepen our defence relationship to ensure mutual benefit. Our Comprehensive Strategic Partnership will benefit people across both countries, supporting regional and global security and prosperity."

As British aerospace company, Rollys Royce, jostles with Safran and GE to co-create an engine for the fifth generation Advanced Medium Combat Aircraft (AMCA), Chalk emphasised, "We stand steadfast in ensuring our defence offer is co-created to Indian specifications which will have sovereign Make-in-India capability".

Rolls Royce is willing to offer Intellectual Property (IP) that it believes will help India to own up and export the combat engine, and develop capabilities in this core technology area, said the British company officials.

"We are offering an unprecedented co-creation model wherein the IP for the combat engine technology will rest with India, allowing future upgrades and exports, as well as enabling

indigenous new engine development. Such co-creation will result in know-how and know-why being established in-country, and will naturally be followed by co-production and co-manufacturing opportunities. We also have a strong ecosystem of strategic local partnerships, suppliers, talent, digital solutions and service capabilities in India, to support such a programme," said Alex Zino, Executive Vice President-Business Development and Future Programmes (Defence), Rolls-Royce.

Zino cited global examples of collabortion the UK has had with other countries for development of combat air programmes.

"The UK has a proven history of partnerships with other nations for successful programmes. These include the EJ200 (developed with Germany, Spain and Italy) and the ongoing next-generation Global Combat Air Programme (being developed in collaboration with Italy and Japan), wherein Rolls-Royce has played a critical role. With a legacy of successful technology collaborations and demonstrated technical know-how, the UK complements India's own technical resources and capabilities for joint development," Zinco added.

Late last year, a delegation of Defense Research and Development Organization (DRDO) visited Rolls Royce facility in Britain to explore possibility of co-creation of the AMCA engine to power indigenous fighter aircraft Tejas.

At the Aero India show held in Bengaluru, Defence Minister Rajnath Singh had announced that AMCA engine will be produced in India which was later seconded by DRDO chairman Samir V Kamat. But, the government is still to finalise a global partner for the DRDO for co-development of the engine.

Rolls-Royce Marine North America Inc, meanwhile, has signed an Memorandum of Understanding (MoU) with Kalyani Strategic Service Limited (KSSL) to give the Indian partner an opportunity to become an in-country provider for propulsion systems for warships.

https://www.thehindubusinessline.com/news/national/uk-keen-to-offer-combat-air-programmes-customised-to-indian-specifications-says-alex-chalk-kc/article66532645.ece

Science & Technology News

THE HINDU

Mon, 20 Feb 2023

Space Sciences Provide Many Opportunities for Engineering Students, says DRDO Scientist

Defence Research and Development Organisation-Director of Special Projects P.S.R. Srinivasa Sastry and Indian Institute of Science-Bengaluru Provost Radha Kanth Padhi on Monday said that the engineering students would have many opportunities in space sciences in which India has been conducting many researches. Centurion University of Technology and Management-

Vizianagaram organised a seminar on ‘Space technology and opportunities’ on the college premises.

Speaking on the occasion, Mr. Sastry said that ISRO and DRDO had been using the space technology for the protection and development of the country.

The University Vice-Chancellor G.S.N.Raju, Registrar P.S.V. Ramana Rao and others were present. The scientists participated in another meeting in SITAM Engineering College of Vizianagaram.

Speaking on the occasion, Mr. Radha Kanth suggested the faculty members to adopt project-based teaching methods. SITAM College Director Majji Sasibhusana Rao said that the interaction with great scientists would enlighten the students and make them think big in their life.

https://www.thehindu.com/news/national/andhra-pradesh/andhra-pradesh-space-sciences-provide-many-opportunities-for-engineering-students-says-drdo-scientist/article66532107.ece