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

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Mon, 14 Mar 2022

गर्व की बात: भारत ने शुरू किया 5.5 जेनरेशन स्टील्थ फाइटर जेट का निर्माण, 'त्रिशक्ति' की बराबरी

रक्षा क्षेत्र में ऐतिहासिक कदम बढ़ाते हुए भारत ने स्टील्थ टेक्नोलॉजी के तहत फाइटर जेट का निर्माण शुरू कर दिया है और इसके साथ ही भारत रूस, अमेरिका और चीन के उस विशेष क्लब में शामिल हो गया है, जिसके पास स्टील्थ टेक्नोलॉजी है। सबसे खास बात ये है, कि भारत स्वदेश में ही 'इंडियाज एडवांस मीडिया कॉम्बेट एयरक्राफ्ट' (AMCA) का निर्माण कर रहा है। आइये जानते हैं, क्यों भारत के लिए ये गर्व की बात है और कैसे धीरे धीरे भारत रक्षा क्षेत्र में आत्मनिर्भर बनने के रास्ते पर है।

आत्मनिर्भरता के रास्ते पर भारत यूक्रेन युद्ध से सबसे बड़ी सबर जो मिलती है, वो यह कि, युद्ध के दौरान आपकी मदद करने वाला कोई नहीं है और अगर आपके पास ताकत है, तभी आप इस दुनिया में सिर उठाकर रह सकते हैं। भारत के पड़ोस में दो-दो दुश्मन हैं और सामरिक लिहाज से पाकिस्तान कम नहीं है और चीन हमसे काफी ज्यादा ताकतवर है। लिहाजा, भारत को वक्त रहते अपने बाहुबल को मजबूत करने की जरूरत है और मोदी सरकार काफी तेजी से इस तरफ कदम भी बढ़ा रही है। भारतीय एयरोस्पेस कंपनी, हिंदुस्तान एयरोनॉटिक्स लिमिटेड (एचएएल) ने घोषणा की है, कि वह भारत के उन्नत मध्यम लड़ाकू विमान (AMCA) के लिए निर्माण प्रक्रिया शुरू कर रही है।

डीआरडीओ बना रहा है लड़ाकू विमान भारत के रक्षा अनुसंधान और विकास संगठन (DRDO) और HAL ने विमान निर्माण प्रक्रिया शुरू करते समय पहली शीट मेटल काटकर युद्धक विमान के निर्माण की शुरुआत कर दी है। AMCA का उद्देश्य भारतीय वायु सेना और भारतीय नौसेना को 5.5 पीढ़ी के ट्विन-इंजन स्टील्थ फाइटर से लैस करना है, जो भारत के पुराने SEPECAT जगुआर और डसॉल्ट मिराज 2000 लड़ाकू विमानों की जगह लेगा, और इसके लाइसेंस-निर्मित सुखोई Su-30MKI जेट का पूरक है। रिपोर्ट के मुताबिक, भारत जिस फाइटर जेट का निर्माण कर रहा है, उसे आकाश से जमीन पर हमला करने, दुश्मनों के वायु रक्षा क्षेत्र में मार करने, इलेक्ट्रॉनिक युद्ध कार्यों के साथ साथ कई और

उद्येश्यों की पूर्ती करने का लक्ष्य रखकर विमान का डिजाइन किया जा रहा है। इस युद्धक विमान को दुश्मनों की हवाई सुरक्षा के साथ साथ महत्वपूर्ण ठिकानों को नष्ट करने और भीषण हमला करने लिए डिजाइन किया जा रहा है।

काफी ताकतवर होगा युद्धक विमान रिपोर्ट के मुताबिक, डीआरडीओ जिस फाइटर जेट का निर्माण र रहा है, उसमें कई और टेक्नोलॉजी को शामिल किया गया है। जैसे फाइटर जेट में सुपरक्रूज टेक्नोलॉजी, डायवर्टर-कम सुपरसोनिक इंटेक, एडवांस एवियोनिक्स और आर्टिफिशियल टेक्नोलॉजी का भी इस्तेमाल किया जा रहा है। इस फाइटर जेट को बेसलाइन स्टील्थ कॉन्फिगरेशन में 20 टन वजन रखने की क्षमता के साथ लैस करने की कल्पना की गई है, जिसमें अपने हथियारों के साथ साथ करीब 1.5 टन आयुध ले जाने की क्षमता होगी। रडार के लिए डिटेक्ट करना होगा मुश्किल वहीं, एबीवी न्यूज की एक रिपोर्ट में प्रोजेक्ट मैनेजर रवि यादव ने कहा था कि, 'स्टेल्थ फाइटर जेट की बॉडी को खास मैटेरियल के साथ डिजाइन किया जाता है, जिसके चलते जब दुश्मन देश के रडार उसे डिटेक्ट करने की कोशिश करते हैं, तो इसकी बॉडी से तरंग टकराने के बाद वापस नहीं जाता है। यानि, इसकी बॉडी तरंगों को ऑब्जर्व कर लेता है, जिसके चलते स्टील्थ फाइटर जेट्स को रडारा डिटेक्ट नहीं कर पाते हैं।' इसके साथ ही इस विमान के जरिए पांच टन ईंधन और हथियार ले जाने की क्षमता है। वहीं, AMCA में श्री-डायमेंशनल थ्रस्ट वेक्टरिंग और एक घरेलू रूप से निर्मित सक्रिय इलेक्ट्रॉनिक स्कैन एरे (AESA) रडार भी होगा।

खतरनाक मिशन को दे पाएगा अंजाम AMCA के डायरेक्टर एके घोष ने एक न्यूज पोर्टल से बात करते हुए कहा था कि, ये फाइटर जेट फिफ्त जेनरेशन का फाइटर एयरक्राफ्ट है, जिसका निर्माण भारत में ही किया जा रहा है और अभी तक सिर्फ अमेरिका, रूस और चीन ने ही पांचवी जेनरेशन के एयरक्राफ्ट बनाने में कामयाबी हासिल की है। इसके साथ ही इस फाइटर जेट को ऑटोनोमस बनाने की योजना है, यानि इस फाइटर जेट को बिना पायलट की मदद से भी उड़ाया जा सकता है, जो काफी खतरनाक तरीके से दुश्मनों पर हमला कर पाएगा। इसे ही 5.5 जेनरेशन का एयरक्राफ्ट कहा जाता है, जो बिना पायलट के दुश्मनों के ठिकाने को तबाह करने की क्षमता रखता है।

निजी क्षेत्र को भी शामिल करने की प्लानिंग एचएएल और भारत की वैमानिकी विकास एजेंसी (एडीए) एएमसीए को डिजाइन करने की देखरेख करती है, वहीं अब भारत भी विकास और उत्पादन लागत को कम करने के लिए निजी क्षेत्र को शामिल करने की योजना बना रहा है। एडीए 2009 से एएमसीए पर काम कर रहा है, पहला प्रोटोटाइप 2024 तक पूरा किया जाना है, और इसकी पहली उड़ान 2025 के लिए योजना बनाई गई है। भारत की 5वीं पीढ़ी की लड़ाकू परियोजना चीन के साथ प्रतियोगी स्तर पर बराबरी करने और पाकिस्तान पर टेक्नोलॉजिकल श्रेष्ठता बनाए रखने और प्रमुख सैन्य प्रौद्योगिकियों पर अपनी रणनीतिक स्वायत्तता को मजबूत करने की अनिवार्यता से प्रेरित हो सकती है।

चीन करता है पांचवी पीढ़ी के विमान होने का दावा वर्तमान में चीन J-20 और FC-31 5वीं पीढ़ी के स्टील्थ फाइटर के संचालन करने का दावा करता है, जिनका इस्तेमाल भारत के खिलाफ हिमालय में उनके सीमा विवादों में किया जा सकता है। इसके विपरीत, भारत के पास अभी जो सबसे क्षेपण फाइटर जेट है, वो राफेल है, जो 4.5 पीढ़ी के फ्रांसीसी निर्मित राफेल और लाइसेंस-निर्मित 4+ पीढ़ी के रूसी Su-30MKI जेट हैं। और भारत जब 5.5 जनरेशन फाइटर जेट का निर्माण कर लेगा, तो फिर चीन को चुनौती देने के लिए पूरी तरह से तैयार हो जाएगा। हालांकि, चीन के 5वीं पीढ़ी के लड़ाकू विमानों की क्षमताएं अभी तक अज्ञात हैं, लेकिन उनके और भारत के मौजूदा लड़ाकू विमानों के बीच पीढ़ी का अंतर हिमालय पर हवाई संघर्ष में भारत को नुकसान में डाल सकता है। भारत के ध्यान में पाकिस्तान की क्षमता भी भारत के AMCA का उद्देश्य पाकिस्तान के 5वीं पीढ़ी के लड़ाकू कार्यक्रम को संतुलित करना भी है, जिसे वह तुर्की के सहयोग से बनाने की कोशिश कर रहा है। भारत का AMCA, अपने नए राफेल अधिग्रहण के साथ, पाकिस्तान के पुराने F-16s, JF-17s, J-10Cs, Dassault Mirage IIIs, Dassault Mirage 5s और Chengdu F-7PGs पर गुणात्मक बढ़त प्रदान कर सकता है। इसके अलावा, AMCA कार्यक्रम अपने घरेलू एयरोस्पेस उद्योग को गति प्रदान करके महत्वपूर्ण सैन्य प्रौद्योगिकियों और हार्डवेयर पर भारत की रणनीतिक स्वायत्तता को बढ़ाता है।

<https://hindi.oneindia.com/news/international/india-drdo-starts-manufacturing-process-of-5-5-gen-fighter-jets-amca-to-compete-china-us/articlecontent-pf417843-669501.html>



Mon, 14 Mar 2022

Seeking CCS nod for indigenous stealth fighter, Centre tells Parliament

The design, development and first prototypes of AMCA could cost more than ₹15,000 crore, officials familiar with the plan said on the condition of anonymity.

The Union government has initiated the process of obtaining approval of the Cabinet Committee on Security for the design and prototype development of India's homegrown fifth-generation fighter, the advanced medium combat aircraft (AMCA), minister of state for defence Ajay Bhatt told Rajya Sabha on Monday.

“5th generation fighter aircraft, due to very special features, are costlier than 4th generation fighter aircraft. Since AMCA is an indigenous 5th generation aircraft, it is less costly than similar aircraft available outside,” the minister said in a written reply to a question.

The design, development and first prototypes of AMCA could cost more than ₹15,000 crore, officials familiar with the plan said on the condition of anonymity.

The Indian Air Force's (IAF) modernisation map envisages the deployment of around 120 stealth fighters (six squadrons) from 2032 onwards, with the stealth planes forming an important element of future air combat.

“After the light combat aircraft, the fighter production ecosystem in the country is fully in place. India is now all set to leap into the AMCA project and carve out a place for itself on the world map as a producer of fifth-generation fighter aircraft,” said Air Marshal Anil Chopra (retd), director general, Centre for Air Power Studies. Currently, only the US, Russia and China have built fifth-generation fighters.

AMCA is expected to be developed in two phases. The first two squadrons will consist of Mk1 version of AMCA, and the remaining four squadrons will be raised with a more advanced version with a raft of sixth-generation technologies, as previously reported. Sixth-generation technologies are more advanced than those in any fighter jet currently in service globally.

The stealth fighter could be put into production by 2030.

Defence Research and Development Organisation (DRDO) is looking at incorporating sixth-generation technologies in AMCA. People aware of the matter said that there is a possibility of equipping AMCA with directed energy weapons, superior anti-missile systems, advanced missile approach warning systems, and teaming it with unmanned systems.

<https://www.hindustantimes.com/india-news/seeking-ccs-nod-for-indigenous-stealth-fighter-centre-tells-parliament-101647283540845.html>



DEFENCE AVIATION POST

Your Connect To The World Of Defence And Aviation

Mon, 14 Mar 2022

DRDO's Rustom II UAV has achieved its Target Altitude of 28,000 feet

The thrust is defence. The government has focused heavily on policies and is investigating several options for boosting defence industry in India. It is presently sufficient. Multiple announcements within the context of the DAP 2020 have laid out clear actions as it unfolds the objective as to how the defence sector would be.

According to SIPRI, the top five spenders in 2020 will be the United States, China, India, Russia, and the United Kingdom, accounting for 62% of worldwide military spending. In 2020, the United States' military spending was predicted to be \$778 billion, while China's military spending, the world's second biggest, was estimated to be \$252 billion.

So, what is our overall defence R&D budget? Taking the Defence Budget 2022-23 into account, it comes to roughly INR 12000 crores, while another rough calculation of R&D for the Industry comes to around INR 3000 crores. R&D allocation in the current defence budget for 2022-23 is less than 2% of total defence budget. According to the Lok Sabha Standing Committee on Defence 2019-2020, R&D in the PRC accounts for 20% of the Chinese defence expenditure. According to the 2021 budget, China could spend up to \$70 billion this year alone on equipment for procurement and military R&D.

While defence has been the driver for many technological achievements, it is now more relevant than ever with the overall transformation of the battlefield. In this environment, R&D in defence calls for more funding for technology development in microelectronics, hypersonics, artificial intelligence (AI), cyber security, and other high-priority military capabilities. This would drive the militarization of the fourth industrial revolution via artificial intelligence, big data, man-machine interface, autonomous unmanned systems, 5G networking, and other means, in order to establish new dominant military-technological advantages. This strengthens the case for Indigenization.

Such is the impact of policies that prioritise R&D in the defence sector as a whole. The statistical spread is meant to help understand the military innovation ecosystem. And, within that, India's Defense Research and Development Organization (DRDO) has been at the forefront of some of the most successful defence advances, such as the incremental advancement of indigenous missile systems.

DRDO has set out to push the boundaries in its new incarnation, with institutional changes and a focus on responsibility. Dr. G Satheesh Reddy, Secretary DDR&D and Chairman DRDO, has been largely responsible for recent developments. Dr. Reddy chats with Manish Kumar Jha of BW Businessworld in an exclusive interview about the vast spectrum of scientific advances and innovations taking place in DRDO facilities across India.

During the discussion, he projected the timeline for defence innovation, which is critical for the applications and efficacy in the production of military gear. He also discusses the critical link between the DRDO and industry.

Satheesh Reddy discusses the relationship with Bharat Forge and TATA, beginning with the Advanced Towed Artillery Gun Systems (ATAGS) and ending with the Light Tank. Despite the fact that the project was entirely conceived by DRDO, he is open to providing proper credit to the other companies participating. "We collaborated with two industries to build two firearms." Things that are significant are common. "However, these are different units created with their own skills," he explains. But the more significant announcement he makes is for the massive endeavour to create the A medium-altitude long-endurance UAV (MALE UAV). What about having such a capability that could conduct credible ISR operations and operate as an import substitute? As he tells me, this is about Rustom II: First and first, I'd want to share some good news with you on the test we performed the day before. We have surpassed the elevation of 27500 feet. So we've almost achieved our goal altitude.

Reddy discusses the important technologies for the aero engine on the critical mission for AMCA: advanced materials, processing method for the single crystal blade, and success storey for the propulsion systems. On the naval front, the DRDO demonstrated the Air Independent Propulsion (AIP) System. The problem that Reddy mentions is the greater capacity fuel cell for AIP.

<https://defenceaviationpost.com/drdo-rustom-ii-uav-has-achieved-its-target-altitude-of-28000-feet/>



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Government of India

Ministry of Defence

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Defence Equipment Projects under Make in India Scheme

The Government has taken several policy initiatives in the past few years under 'Make in India' program and brought in reforms to encourage indigenous design, development and manufacture of defence equipment in the country, thereby expanding the production of indigenous defence equipment. These initiatives, inter-alia, include according priority to procurement of capital items from domestic sources under Defence Acquisition Procedure (DAP)-2020; Notification of two 'Positive Indigenisation Lists' of total 209 items of Services and one 'Positive Indigenisation List' of total 2851 items of Defence Public Sector Undertakings(DPSUs), for which there would be an embargo on the import beyond the timelines indicated against them; Simplification of Industrial licensing process with longer validity period; Liberalisation of Foreign Direct Investment(FDI) policy allowing 74% FDI under automatic route; Simplification of Make Procedure; Launch of Innovations for Defence Excellence (iDEX) scheme involving Startups & Micro, Small and Medium Enterprises (MSMEs); Implementation of Public Procurement (Preference to Make in India) Order 2017; Launch of an indigenization portal namely SRIJAN to facilitate indigenisation by Indian Industry including MSMEs; Reforms in Offset policy with thrust on attracting investment and Transfer of Technology for Defence manufacturing by assigning higher multipliers; and Establishment of two Defence Industrial Corridors, one each in Uttar Pradesh and Tamil Nadu. Many significant products including 155mm Artillery Gun system 'Dhanush', Light Combat Aircraft 'Tejas', Surface to Air Missile system 'Akash', Main Battle Tank 'Arjun', T-90 Tank, T-72 tank, BMP-II/IJK, Su-30 MK1, Cheetah helicopter, Advanced Light Helicopter, Dornier Do-228, High mobility Trucks, INS Kalvari, INS Khanderi, INS Chennai, Anti-Submarine Warfare Corvette (ASWC), Arjun Armoured Repair and Recovery Vehicle, Bridge Laying Tank, Bi-Modular Charge System (BMCS) for 155mm Ammunition, Medium Bullet Proof Vehicle (MBPV), Weapon Locating Radar (WLR), Integrated Air Command and Control System (IACCS), Software Defined Radios(SDR), Lakshya Parachute for Pilotless Target Aircraft, Opto Electronic Sights for battle tanks, Water Jet Fast Attack Craft, Inshore Patrol Vessel, Offshore Patrol Vessel, Fast Interceptor Boat, Landing Craft Utility, 25 T Tugs, etc. have been produced in the country during the last few years which are being used by the Indian Armed Forces.

The indigenous Main Battle Tank (MBT) Arjun Mk-1A designed and developed by the Defence Research and Development Organization (DRDO) is compatible with the present and future requirement of Armed Forces. MBT Arjun Mk-1A is incorporated with 71

upgrades in comparison to MBT Arjun Mk-1, thereby endowed to have superior fire power, enhanced high mobility and excellent protection characteristics required to fulfil the challenging requirements of the battle field.

The Government, in the last three years i.e. from 2018-19 to 2020-21 and current year till December 2021, has accorded Acceptance of Necessity (AoN) to 150 proposals worth Rs 2,47,515 crore approximately, under various categories of Capital procurement which promote domestic manufacturing as per DAP- 2020. In addition, during the last three years i.e. from 2018-19 to 2020-21 and current year till January 2022, out of total 191 Capital acquisition contracts signed, 121 have been signed with Indian vendors for capital procurement of defence equipment for Armed Forces. This information was given by Raksha Rajya Mantri Shri Ajay Bhatt in a written reply to Shri Vaiko in Rajya Sabha on March 14, 2022.

<https://pib.gov.in/PressReleaseDetail.aspx?PRID=1805751>



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Ministry of Defence

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New Process for Procurement of Defence Equipment

The revision of procedure for Defence Capital Acquisitions as given in DPP-2016 was undertaken incorporating comments/suggestions of a wide spectrum of stakeholders and accordingly, Ministry of Defence promulgated the Defence Acquisition Procedure 2020 (DAP 2020) with effect from 01st October, 2020.

To bring transparency & speed in defence acquisitions, following steps have been taken:

- i. For cutting down time frames:
 - Single stage grant of AoN,
 - Delegation of approvals/financial powers,
 - Simplification of trials process, and
 - Integrated and joint approach in D&D cases.
- ii. To promote probity, public accountability and transparency in defence capital procurements:
 - Pre Contract Integrity Pact (PCIP) for all cases above Rs 20 crore,
 - Time bound disposal of complaints,
 - Ascertaining vigilance status of L1 vendor before seeking approval of the Competent Financial Authority (CFA),
 - Notification of guidelines for Penalties in Business Dealings with suspect Entities,
 - Capacity Assessment guidelines for Shipbuilding Entities.

This information was given by Raksha Rajya Mantri Shri Ajay Bhatt in a written reply to Shri Prakash Javadekar in Rajya Sabha on March 14, 2022.

<https://pib.gov.in/PressReleaseDetail.aspx?PRID=1805751>



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Ministry of Defence

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Defence Modernisation

Details of Budget Estimates (BE) and Expenditure incurred by Armed Forces under Capital Acquisition segment (Modernisation) of the Defence Services Estimates since Financial Year 2014-15 are as under:

(Rs. In crore)

Financial Year	Allocation & Release (Revised Estimates)	Actual Expenditure
2014-15	66,151.73	65,862.38
2015-16	65,400.00	62,235.54
2016-17	62,719.36	69,396.69
2017-18	68,965.24	72,732.20
2018-19	73,882.95	75,892.85
2019-20	89,836.16	91,053.15
2020-21	1,14,320.30	1,18,966.44
2021-22	1,13,717.58	88,868.41*

* Upto February, 2022.

Modernisation involves the acquisition of new state-of-the-art platforms, technologies and weapon systems to upgrade and augment defence capabilities. Modernisation of Defence Forces is a continuous process based on threat perception, operational challenges and technological changes to keep the Armed Forces in a state of readiness to meet the entire spectrum of security challenges. This is achieved through induction of new equipment and technological upgradation of capabilities. The equipment requirements of the Armed Forces are planned and progressed through a detailed process which includes 15 Year Long Term Integrated Perspective Plan (LTIPP), a five-year Service-wise capability Acquisition Plan, a two-year roll-on Annual Acquisition Plan and deliberations by the Defence Acquisition Council. The modernisation projects are progressed as per the approved Capital Acquisition Plans and in terms of the extant Defence Acquisition Procedure.

Details of expenditure incurred on Indigenous Procurement of Defence Equipment by the three Services for modernisation from Financial Year 2014-15 to 2021-22 are as under:

(Rs. in crore)

Year	Expenditure
2014-15	39,879.00
2015-16	39,149.63
2016-17	41,872.03
2017-18	43,696.86
2018-19	38,963.68
2019-20	52,920.70
2020-21	76,073.98
2021-22	53,462.26*

*upto February,2022

Since 2014 total amount of Rs 1,130.30 crore have been allocated to Universities/Indigenous firm/ MSMEs towards R&D in defence technology. This information was given by Raksha Rajya Mantri Shri Ajay Bhatt in a written reply to Dr Santanu Sen in Rajya Sabha on March 14, 2022.

<https://pib.gov.in/PressReleaseDetail.aspx?PRID=1805751>



Press Information Bureau
Government of India

Ministry of Defence

Mon, 14 Mar 2022 2:58PM

Government Plans on AMCA

Process for obtaining Cabinet Committee on Security's (CCS) approval for design and prototype development of Advanced Medium Combat Aircraft (AMCA) has been initiated. 5th Generation fighter aircraft, due to very special features, are costlier than 4th Generation fighter aircraft. Since AMCA is an indigenous 5th Generation aircraft, it is less costlier than similar aircraft available outside.

This information was given by Raksha Rajya Mantri Shri Ajay Bhatt in a written reply to Smt Shanta Chhetri in Rajya Sabha on March 14, 2022.

<https://pib.gov.in/PressReleaseDetail.aspx?PRID=1805751>

Mon,14 Mar 2022

ASTR Defence Develops Made-In-India Indigenous Pistol

ASTR Defence a defence company based out of Bangalore has designed and developed India's first pistol. ASTR is a licensed defence equipment innovator developing advanced next generation weapon systems catering to the needs of India's military and security forces to counter India's technologically advancing adversaries.

ATAL 9mm & ATAL 0.032 ACP

The ATAL 9mm is made for the military and law enforcement. The ATAL 0.32 ACP for civilian use. The company has also developed Indra a modular Assault Rifle family that provides 6 Calibres and 5 Different Configurations platform to the user. The indigenously designed, developed and manufactured Selective Fire Rifle comes in 6 Calibres and 5 configurations with more than 75% parts commonality. Indra assault rifle family combines proven operating principles that have been used in military weapons for many decades and innovative features that make the weapon modular, light weight, ergonomic, compact, accurate and highly reliable in most difficult operating conditions.

RED DOT SIGHT

The other hi-tech products are the RDS developed is a compact, easy to use and parallax free enclosed sight with unlimited eye relief developed for assisting a shooter in maintaining accuracy during quick-reaction, close combat or Urban battle scenarios. Measuring just 58mm in length and 120 grams, it can easily be mounted on an assault Rifle, Carbine, SMG and Machine pistols.

BATTLE SCOPE

ASTR Prismatic Battle Scope is a Compact, Lightweight Day Sight available in 4x or 6x Magnification. With an effective range of 800m, it is suitable for for both Assault Rifles and Light Machine Guns. With a wide field of view and exceptionally short length, the sight is suitable for rapid target engagement at close range as well as long range. ASTR is currently working on cutting edge technology to provide the Indian armed forces with unmatched weapon systems.

<http://www.indiandefensenews.in/2022/03/astr-defence-develops-indias-first.html>

Mon, 14 Mar 2022

Hensoldt Equips German C-130 "Hercules" With State-of-the-art Missile Defence System

In the course of the acquisition of three Lockheed C-130J-30 and KC-130J "Hercules" aircraft each, the German Bundeswehr decided to equip all aircraft with HENSOLDT's latest generation of defence sensor technology. With MILDS Block 2, HENSOLDT is supplying a total of 35 sensors (five per aircraft and five units for lab use) to Danish company Terma A/S, which is managing the integration of the systems at Lockheed Martin through Terma Inc. The contracts, with a scope of 2.9 million euros, were signed in 2020. So far, 20 sensors and the ordered desiccant-kits have already been delivered. By January 2023, the remaining 15 sensors will be delivered. The first "Hercules" for the German Air Force was handed over in Évreux/Fauville (France) on February 19, 2022 to the Franco-German air-transport squadron. With MILDS Block 2, HENSOLDT is also helping to close the capability gap created by the retirement of the C-160 "Transall".

MILDS Block 2 is a passive, true imaging sensor system optimised for detecting emission signatures in the UV solar blind spectral band emitted from an approaching missile exhaust plume. The sensor is designed as the successor to the well-known MILDS AN/AAR-60, offering increased sensitivity and additional applications. MILDS Block 2 detects incoming missile threats and indicates the direction of arrival with maximum warning time. MILDS Block 2's high spatial resolution combined with advanced temporal processing provides a very high declaration rate while virtually eliminating false alarms. MILDS Block 2 consists typically of four to six identical interconnected detectors integrated into the higher-level EW system. In addition, neither cooling nor a central processing unit are required.

A high percentage of aircraft losses in current and recent conflicts have been caused by ground-based defence systems using IR SAM (infrared surface-to-air missile). To keep pace with this evolution on the threat side, HENSOLDT Sensors has developed the MILDS AN/AAR-60 Block 2 missile warning system, a self-protection solution specifically for helicopters and wide-body aircraft that allows for higher performance and enables additional features such as in-sensor data recording and Hostile Fire Indication (HFI). Rapid detection and declaration, combined with automatic countermeasure release and crew alerting, supports mission success and safe crew and aircraft return.

<https://www.asdnews.com/news/defense/2022/03/14/hensoldt-equips-german-c130-hercules-with-stateoftheart-missile-defence-system>

Science & Technology News



Press Information Bureau

Government of India

Ministry of Science & Technology

Mon, 14 Mar 2022 5:28 PM

A high level delegation led by Danish Minister of Health, Mr Magnus Heunicke calling on Union Minister Dr Jitendra Singh at New Delhi

Two sides discussed joint training programmes for health workers

Dr Jitendra Singh recalled that in January this year, India & Denmark agreed to initiate joint research and development on green fuels including green hydrogen, during the Joint S&T Committee meeting held in Delhi

Danish Minister of Health, Magnus Heunicke called on Union Minister of State (Independent Charge) Science & Technology; Minister of State (Independent Charge) Earth Sciences; MoS PMO, Personnel, Public Grievances, Pensions, Atomic Energy and Space, Dr Jitendra Singh and discussed joint training programmes for health workers.

Magnus Heunik informed Dr Jitendra Singh that the Novo Nordisk Foundation of Denmark is preparing a US \$100 Million project for implementation in India, inspired by the success of the temporary hospitals project. This project will focus on research-guided training of health workers in cardio-metabolic diseases and the program will create a sustainable system for training health workers in non-pharma management of early stage diabetes and other such CMD diseases.

A delegation led by the Danish Minister of Health reviewed with their Indian counterparts, the progress of bilateral cooperation particularly in areas like Green Strategic Partnerships. Dr Jitendra Singh recalled that during the second wave of the Covid pandemic, the Danish Embassy in India facilitated a grant of Danish Kroner 10 million (almost Rs 12 crore) from the Novo Nordisk Foundation to support emergency hospitals in India. He said, six such hospitals are already functioning: two in Punjab, and one each in Haryana, Nagaland and Assam, and two more are under construction in Meghalaya and Nagaland. These hospitals were established within a very short period, through innovative materials and processes, including by startups.

Dr Jitendra Singh said, these hospitals were established in the States with support from Indian organisations C-CAMP (Bengaluru) and Invest India and this entire exercise is an example of Foreign-Union-State-Private cooperation, with support from the Indian startup and corporate sector as well. The Minister said that such partnerships between Indian and Danish non-government and private sectors are a sign of the strong relationship between our two countries.

Dr Jitendra Singh recalled that in January this year, India & Denmark agreed to initiate joint research and development on green fuels including green hydrogen, during the Joint S&T Committee meeting held in Delhi.

The Joint Committee discussed national strategic priorities and developments in Science, Technology, and Innovation of both countries with a special focus on green solutions of the future - strategy for investments in green research, technology, and innovation at the virtual meeting. The committee emphasised on development of bilateral collaboration on mission-driven research, innovation, and technology development, including climate and green transition, energy, water, waste, food, and so on as agreed by the two Prime Ministers while adopting the Green Strategic Partnership – Action Plan 2020-2025. They agreed to organise 3-4 webinars for partnership development and stressed on promoting call for proposals in green fuels, including green hydrogen.

The Joint Committee also reviewed the progress of the ongoing projects of last two joint calls being implemented in the areas of energy research; water; cyber-physical systems, and bioresources & secondary agriculture.

<https://www.pib.gov.in/PressReleasePage.aspx?PRID=1805859>



Mon, 14 Mar 2022

ISRO Gears Up For Mini Rocket Launcher's Maiden Flight in May

The Indian Space Research Organisation (ISRO) is all geared up for the maiden flight of its mini rocket launcher – Small Satellite Launch Vehicle (SSLV) – in May.

The national space agency announced on Monday that it has successfully carried out the ground testing of the newly developed solid booster stage (SS1) for SSLV at Satish Dhawan Space Centre in Sriharikota.

The remaining stages of SSLV, including the SS2 and SS3, have already undergone necessary ground tests successfully and are ready for integration. The solid booster stages basically provide the initial thrust to the spacecraft as it lifts off from the ground and begins its first ascent. “The ground test conducted at 12 noon has given sufficient confidence to proceed with the first developmental flight of SSLV (SSLV-D1) in May,” said the agency, which has been planning to take the SSLV off the ground since 2019.

Designed to bolster the agency’s partnership with the private sector for the launch of commercial satellites, the SSLV’s development flight has been marred by delays, following the Covid-19 pandemic that impacted the ground work.

According to ISRO, the propulsion parameters during the test conducted on Monday were found satisfactory and closely matching with the predictions. The agency had made use of the latest new technologies and innovative processes which were successfully validated in the ground test. The indigenously developed mini-rocket-launcher is specially designed to carry

smaller commercial satellites into the low-earth orbit (LEO) from 200-2,000 km above the Earth's surface. It has a payload capacity of upto 500 kg.

Most commercial launches of ISRO involving international satellites were earlier carried out using its workhorse Polar Satellite Launch Vehicle (PSLV). The need for a separate launch vehicle was being felt for a long time, to meet the growing demand from the private sector. The Department of Space had also set up a separate commercial arm – New Space India Limited (NSIL) – for commercial tie-ups with the global space market and manage technology transfer from ISRO to industries.

The private companies also seek a quick turnaround time for launching multiple satellites – a feature that SSLV is most-suited for, apart from being cost-effective. According to ISRO scientists, it is developed with one-fourth of the total cost of a PSLV, and can be assembled within days. The government had sanctioned a total cost of Rs 169 crore for the development project of SSLV, including the qualification of the vehicle systems and the flight demonstration which will be done through three development flights (SSLV-D1, SSLV-D2 & SSLV-D3), Union Minister Dr Jitendra Singh had earlier told Rajya Sabha.

“The development of SSLV has been primarily envisaged to bring a cost-effective launch vehicle with high launch frequency and quick turnaround capability in order to cater to the growing opportunity in the global launch services market for small satellites,” he said.

The basic hardware & structures for the SSLV development project, including the solid motor cases, nozzle sub-systems, mandrels for the casting of solid motors, inter-stage structures, actuator motors & fixtures were also to be realised through private industry tie-ups.

<https://www.news18.com/news/india/isro-gears-up-for-mini-rocket-launchers-maiden-flight-in-may-4874606.html>



Mon, 14 Mar 2022

ISRO lines up Chandrayaan-3, SSLV & RLV Tests

The Indian Space Research Organisation (ISRO), which has already completed its first successful launch this year, is getting busy with a slew of key tests pertaining to three important missions/projects in the coming weeks aside from a launch mission. While the polar satellite launch vehicle (PSLV) mission is scheduled to launch earth observation satellite-6 (EOS-6) or Oceansat-3 in the early part of April, important tests under the small satellite launch vehicle (SSLV) and reusable launch vehicle (RLV) programmes have been lined up in the weeks preceding and following that. A Chandrayaan-3 landing test too is scheduled in March.

Chandrayaan-3

With a quick formal review of the programme having been completed by Isro chairman S Somanath earlier this month, the project team is burning the midnight oil to make the launch possible this year. “We are trying to launch it this year, but we will take a final call on the launch schedule later. A lot of tests that were pending are now being carried out. One major test would be using a hanging condition. For Chandrayaan-2, we had done this at Mahendragiri, where the landing experiment was simulated. For Chandrayaan-3, we will be

doing the same at the Satish Dhawan Space Centre, Sriharikota (SDSC-SHAR),” Somanath told TOI. For this test, a unit almost similar to the lander — the propulsion system — will be used to study nominal and other performances. The hardware is already at the spaceport in Sriharikota and Isro is preparing for the test.

RLV-TD

Multiple sources in Isro, while pointing to various ongoing activities, said that some crucial tests part of the RLV technology demonstrator (RLV-TD) programme have been happening at Challakere, some 220km from Bengaluru. Somanath told TOI that Isro has been carrying out a series of (captive) tests over the past few weeks at Challakere. “In yesterday’s (Saturday’s) test, we used a flight model. Now, we have to go back and analyse data from the flight model test. We need to look at all information and analyse if it reached the correct location, instrumentation health and other parameters. Any corrections felt necessary in the software will be done and the hardware will go back to Trivandrum (Vikram Sarabhai Space Centre), where it will go through a full simulation test before coming back in April first week for the landing experiment (LEX),” Somanath said.

SSLV

The space agency, which is hoping to carry out the first developmental flight of the SSLV — to put into orbit EOS-2 or Microsat, marking the beginning of a new class of launch vehicles in India will conduct an important test in the next couple of days. The static test of the first stage of SSLV will be done in the next couple of days,” Somanath confirmed, without elaborating on the first developmental flight.

<https://timesofindia.indiatimes.com/city/bengaluru/isro-lines-up-chandrayaan-3-sslv-rlv-tests/articleshow/90190539.cms>

