पंजाब केसरी

Wed, 18 Dec 2019

ब्रह्मोस सुपरसोनिक क्रूज मिसाइल का सफल परीक्षण

बालासोर, (भाषा): भारत ने बेहद सटीक तरीके से निशाना साधने की क्षमता को परखने के लिए मंगलवार को ब्रह्मोस सुपरसोनिक क्रूज मिसाइल के दो संस्करणों का अलग-अलग सफल परीक्षण किया। रक्षा सूत्रों ने बताया कि सुबह लगभग साढ़े आठ बजे बालासोर के पास चांदीपुर स्थित एकीकृत परीक्षण केंद्र (आईटीआर) लॉंच पैड-3 से एक स्वचालित मोबाइल लॉंचर के जरिए ब्रह्मोस के जमीनी संस्करण का प्रायोगिक परीक्षण किया गया। उन्होंने बताया कि ब्रह्मोस के हवाई संस्करण का परीक्षण दोपहर बाद किया गया जिसमें कलाईकुंड वायुसेना स्टेशन से भारतीय वायुसेना के एक लड़ाकू विमान ने उड़ान भरी और बंगाल की खाड़ी के ऊपर हवा में आ रहे लक्ष्य पर निशाना साधकर मिसाइल दागी।

2.5 टन है मिसाइल का वजन

रक्षा अनुसंधान एवं विकास संगठन (डीआरडीओ) के एक सूत्र ने बताया कि लक्ष्यों पर बेहद सटीक निशाना साधने की मिसाइल की क्षमता को परखने के लिए ये परीक्षण किए गए। परीक्षण सफल रहे और सभी मानक पूरे कर लिए गए। ब्रह्मोस मिसाइल मध्यम दूरी तक मार करने वाली रैमेजेट सुपरसोनिक क्रूज मिसाइल है जिसे पनडुब्बियों, युद्धपोतों, लड़ाकू विमानों या जमीन से दागा जा सकता है। 2.5 टन वजनी यह मिसाइल लगभग 300 किलोमीटर की दूरी तक मार कर सकती है। रक्षा सूत्रों ने बताया कि मिसाइल के 450 किलोमीटर की मारक क्षमता वाले पहले विस्तारित संस्करण का 11 मार्च 2017 को सफल परीक्षण किया गया था। ब्रह्मोस के कम दूरी के जमीनी संस्करण का 30 सितंबर 2019 को चांदीपुर स्थित आईटीआर से परीक्षण किया गया था। इसी तरह भारतीय वायुसेना ने इस साल 22 अक्टूबर को अंडमान और निकोबार द्वीप समूह स्थित त्राक द्वीप से ब्रह्मोस मिसाइल के सफल परीक्षण किए थे। ब्रह्मोस भारत के डीआरडीओ और रूस के एनपीओएम का संयुक्त उपक्रम है। मिसाइल सेना के तीनों अंगों-थलसेना, नौसेना और वायुसेना के बेड़ों में शामिल है। ब्रह्मोस को दुनिया की सबसे तेज सुपरसोनिक क्रूज मिसाइल माना जाता है।

Business Standard

Wed, 18 Dec 2019

DRDO test fires two versions of BrahMos supersonic cruise missile

A land-attack version of the missile was test-launched from a mobile autonomous launcher at Launch Pad-3 of the Integrated Test Range (ITR) at Chandipur near here at around 8.30 am

Balasore: India on Tuesday successfully conducted separate trials of two variants of supersonic cruise missile BrahMos to check its capability to hit targets with precision and accuracy, Defence sources said.

A land-attack version of the missile was test-launched from a mobile autonomous launcher at Launch Pad-3 of the Integrated Test Range (ITR) at Chandipur near here at around 8.30 am.

Its air force variant was fired in the afternoon when a fighter jet of the IAF flew from Kalaikunda airbase and launched the missile towards an air-borne target over the Bay of Bengal near here.

The trials, carried out to check the capability of the missile to hit targets with pinpoint accuracy, were successful, meeting all the parameters, a Defence Research and Development Organisation (DRDO) source said.

The BrahMos missile is a medium-range ramjet supersonic cruise missile capable of being launched from submarines, warships, fighter jets or land. The 2.5-tonne missile has a strike range of nearly 300 kilometres.

The first extended version of the missile with a strike range of 450 km was successfully tested on March 11, 2017, Defence sources said.

A shorter range land-attack version of the BrahMos was earlier successfully test-fired from the ITR at Chandipur on September 30, 2019.

Similarly, the IAF had conducted successful trials of BrahMos missiles from Trak Island in Andaman and Nicobar Islands on October 22 this year.

BrahMos is a joint venture of the DRDO of India and the NPOM of Russia.

The missile is operational with the Indian Army, Navy and Air Force.

The BrahMos is regarded as the fastest supersonic cruise missile in the world, the sources said adding that it has established itself as a major force multiplier in modern warfare with its land-attack and anti-ship capabilities with multi-role and multi-platform abilities.

https://www.business-standard.com/article/pti-stories/2-versions-of-brahmos-missile-successfully-test-fired-119121701182_1.html

THE ASIAN AGE

Wed, 18 Dec 2019

Supersonic cruise missile BrahMos successfully test-fired from Odisha's Chandipur

The first extended version of the missile with a strike range of 450 km was successfully tested on March 11, 2017, Defence sources said

Chandipur: Supersonic cruise missile BrahMos was successfully test-fired from a base in Odisha's Chandipur on Tuesday, Defence sources said. The land-attack version of the missile was test-fired from a mobile autonomous launcher at Launch Complex-3 of the Integrated Test Range (ITR) at Chandipur near here at around 8.30 am, they said.

The trial of the surface-to-surface missile was successful, meeting all the parameters, a Defence Research and Development Organisation (DRDO) source said. The BrahMos missile is a medium-range ramjet supersonic cruise missile capable of being launched from submarines, warships, fighter jets or land. The first extended version of the missile with a strike range of 450 km was successfully tested on March 11, 2017, Defence sources said.

A shorter range land-attack version of the BrahMos was successfully test-fired from the ITR at Chandipur on September 30, 2019, they said. BrahMos is a joint venture between India's DRDO and NPOM of Russia. The missile is operational with the Indian Army, Navy and Air Force.

The BrahMos is regarded as the fastest supersonic cruise missile in the world, the sources said. It has established itself as a major force multiplier in modern warfare with its land-attack and anti-ship capabilities with multi-role and multi-platform abilities, they added.

http://www.asianage.com/india/all-india/171219/supersonic-cruise-missile-brahmos-successfully-test-fired-from-odishas-chandipur.html

DefenceNews

Wed, 18 Dec 2019

PH likely to sign BrahMos missiles deal with India in 2020

The Philippines and India are likely to reach a deal for the BrahMos cruise missiles in 2020, Defense Secretary Delfin Lorenzana said Monday.

The contract signing for the supersonic cruise missile jointly developed by India and Russia is seen to happen in the first or second quarter of the year through a government-to-government deal, he told reporters.

Apart from the Philippines, countries like Thailand and Vietnam have reportedly shown interest to purchase the world's fastest supersonic cruise missile – which has yet to see the first foreign country to acquire this capability.

The Philippines is looking to acquire two batteries, Lorenzana said.

The missiles are envisioned to equip the Land-Based Missile System Battery unit activated by the Philippine Army in October.

A mock-up of the land-based version of BrahMos mounted on a truck launcher system was put on display at a two-day defense expo in Taguig City in early December. According to a timeline displayed at the expo, the Army sees the delivery of the equipment by 2024.

A mock-up of BrahMos land-based anti-ship missile was featured at PH Army's capability expo. Talks are underway w/ India for the possible purchase of 1 battery. The Army activated 1st Land-Based Missile System Battery in October in anticipation of its acquisition.

The missile system, which can be used for coastal defense and ground attack, would boost the Philippines' firepower capability in the face of territorial threats.

The Philippines and India have stepped up its defense engagements in recent years. In 2017, the two countries signed a defense and logistics agreement.

India "desires of upping our engagements" with the Philippines in many folds, New Delhi ambassador to Manila Jaideep Madumzar said last week at a forum at the National Defense College of the Philippines.

Indian ambassador to Manila Jaideep Madumzar says they are "upping engagements" with the Philippines. Implementing arrangements for the future purchase of defense materiel & equipment are almost finalized .

He said a joint defense cooperation committee is set to meet in January.

India is also looking forward to participating in many defense projects of the Philippines.

"Implementing arrangements for the purchase of defense materiel and equipment are almost finalized," Madumzar said.

https://www.defencenews.in/article/PH-likely-to-sign-BrahMos-missiles-deal-with-India-in-2020-808442

Business Standard

Wed, 18 Dec 2019

Gen-5 fighter on track, may fly by 2025

The second of a two-part series focuses on the capabilities of India's most ambitious fighter programme, the Advanced Medium Combat Aircraft (AMCA), and what design challenges it is facing

AJAI SHUKLA
New Delhi, 17 December

With the Indian Air Force (IAF) already operating the Tejas Mark 1 fighter, the Aeronautical Development Agency (ADA) developing the Tejas Mark 2 and Hindustan Aeronautics (HAL) building the interim Tejas Mark 1A, there have been important breakthroughs in India's most ambitious fighter programme: the futuristic Advanced Medium Combat Aircraft (AMCA).

Girish Deodhare, who heads ADA, the Defence R&D Organisation (DRDO) agency that oversees the Tejas and AMCA programmes, briefed *Business Standard* on the capabilities and development of the AMCA — a stealthy, fifth-generation (5-gen), medium weight fighter that is slated to be a match for any adversary in the skies.

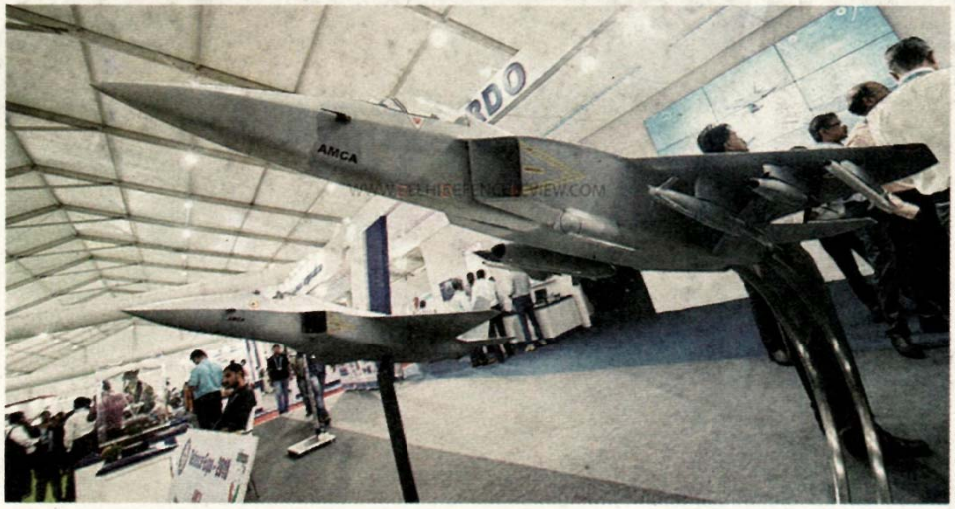
"After eight years of design work, we have completed the stealth shaping of the AMCA. We are now building a full scale model of the fighter, in order to measure its 'radar cross section' (a measure of an object's visibility to radar)," said Deodhare.

The ADA chief said the AMCA's design is now mature and its internal systems are laid out. That clears the way for its detailed design, followed by metal cutting — the symbolic start of constructing a flying prototype.

"The AMCA's first flight is targeted for 2024-25," said Deodhare. "We plan to build five prototypes for a flight-testing programme that would take about four years. By 2028-29, we plan to begin series manufacture."

A 5-gen fighter is characterised by four advanced capabilities. It is stealthy, or near-invisible to enemy radar; it can 'supercruise', or fly faster than the speed of sound without engaging its engines' fuel-guzzling afterburners; it has advanced avionics and sensors with network centric operations, coupled with artificial intelligence, to enhance the pilot-aircraft interface, allowing a single pilot to fly and fight the aircraft; and it can detect and engage targets from long distances, outranging its adversaries.

Stealth fighters are most crucial in the opening stages of a war, when they take advantage of their invisibility to enter enemy airspace and strike enemy radars, air bases and control centres. With air superiority thus obtained, "non-stealthy" fighters like the Sukhoi-30MKI can fly into enemy airspace, without incurring heavy casualties, to strike targets like roads, railways, airfields, depots and ground forces.



A structural design computer image of the Advanced Medium Combat Aircraft. The first of these fighters is to fly by 2024-25

To achieve stealth, a 5-gen fighter is shaped to scatter radar waves, rather than reflect them back. Special materials and paints further reduce radar reflectivity. In stealth mode, a 5-gen fighter conceals its fuel and weapons in an internal bay, since carrying them under its wings, as conventional fighters do, creates protrusions that reflect radar waves and compromise stealth.

Deodhare said that while AMCA would be a 25-tonne fighter, it would have an "all-up-weight" (AUP) of just 20 tonnes in stealth mode, when it would carry just one-and-a-half tonnes of weaponry concealed in internal weapon bays. In "non-stealth mode", another five tonnes of weaponry or fuel could be carried on external stations, under its wings.

The AMCA would be able to carry up to 6.5 tonnes of fuel in internal tanks. While its operating radius remains secret, a back-of-the-envelope calculation indicates it can easily strike targets 1,000 kilometres away and return to base.

In "non-stealth" mode, it can carry an additional 1,200-1,300 litres in its internal bays, with its weapons load mounted on external, under-wing stations, thus operating as a potent long-range bomber.

A key challenge in the AMCA programme is to develop a new engine, powerful enough to permit supercruising. For now, AMCA designers are working with twin General Electric (GE) F-414 engines — which is also being used, in a single-engine configuration, to power the Tejas Mark 2.

However, this engine is not powerful enough for super-cruising in all configurations. "Each F-414 engine generates a maximum thrust of 98 KiloNewtons (KN), and in Indian climatic conditions that effectively reduces to 90 KN. We have calculated that an AMCA, with the configuration the IAF has specified, requires a thrust of about 220 KN (in Indian conditions) for super-cruising. That means we need twin engines, each generating 110 KN thrust in Indian conditions," says Deodhare.

A clutch of DRDO laboratories, led by the Gas Turbine Research Establishment (GTRE), Bengaluru, is working to develop the AMCA engine. With the Kaveri engine, GTRE had managed to generate a maximum thrust of 83 KN. Now the target is 50 per cent higher.

Former defence minister Manohar Parrikar had estimated the AMCA's development cost at about $4 billion — a major share of which would go into the engine. In 2015, India harnessed American expertise by setting up a "joint working group" (JWG) to co-develop jet engine technology. But on October 24, US Under Secretary of Defence Ellen Lord revealed the JWG had been scrapped since US export control laws safeguarded the technology that the DRDO wanted.

There is also an expectation, so far unrealised, that French engine maker, Safran, could assist with developing a suitable jet engine, as a part of its offset obligations relating to the purchase of 36 Rafale fighters.

A key decision in designing the AMCA relates to the trade-off between stealth and manoeuvrability. "As other stealth fighter designers have discovered earlier, the edge matching of surfaces and incorporation of an internal weapons bay that characterises stealth design also compromise the fighter's aerodynamics, inhibiting its manoeuvrability. The IAF understands that, and has been sitting at the table with ADA in order to arrive at a mutually acceptable blend of performance and stealth," says Deodhare.

Facilitating this cooperation is the IAF's new leadership, headed by Air Chief Marshal R K S Bhadauria, which includes several officers who have been test pilots for the Tejas programme, and have an in-depth knowledge of the issues. ADA officials point out that, having already mastered a range of aerospace technologies in the Tejas programme, the AMCA team is free to focus tightly on the Gen-5 challenges.

The technologies yielded by the Tejas programme include: "unstable aerodynamic design" for extra agility; complex control laws and a quadruplex digital flight control system; light composite materials for aero-structures; a glass cockpit with digital instrumentation; an environment control system with an on-board oxygen generating system; and advanced avionics that help the pilot switch quickly between air-to-air and air-to-ground roles.

Also mastered is the ability to do flight testing of fighter aircraft rapidly, without compromising safety. This experience will help in bringing the AMCA from design to induction without delay.

THE TIMES OF INDIA

Wed, 18 Dec 2019

Need focus on futuristic defence R&D: DRDO Chief

Kochi: It is high time that the research and development (R&D) teams working on defence systems study new technological trends and look out for what advanced nations are developing for their forces, said DRDO chairman G Satheesh Reddy. Thus, defence research and development organization (DRDO) laboratories have to spend at least 20-25% for futuristic R&D," he added.

Inaugurating the annual day function of the DRDO's Naval physical and oceanographic laboratory (NPOL) in Kochi on Monday, Satheesh Reddy said that it is important to set very high goals and work beyond the specifications set by the users — namely the armed forces.

He congratulated the scientists, technical officers and staff for the many indigenous systems developed by NPOL. "The Indian Navy has respect for DRDO, primarily due to the products that NPOL has been making for them. If we are aiming for international consultancy, you should come out with model systems. This will pave the way for export of our systems," said Reddy who is also the secretary, department of defence R&D. The DRDO Chief said that it is necessary to identify the production agency or the industry at the early development stage.

Speaking on the occasion, Samir V Kamat, director general, naval systems & materials, said, "We are fortunate that Indian Navy among the tri-services has been the most proactive and receptive to indigenous systems."

https://timesofindia.indiatimes.com/city/kochi/need-focus-on-futuristic-defence-rd-drdo-chief/articleshow/72860255.cms

THE HINDU

Wed, 18 Dec 2019

NPOL comes in for praise for developing innovative systems

Sole DRDO laboratory in Kerala celebrates 67th annual day

The DRDO has developed modern indigenous systems and equipment worth a production value of ₹ 2.70 lakh crore for the three services, thus enabling huge foreign exchange savings for India, G. Satheesh Reddy, Secretary, Department of Defence (R and D) and Chairman of DRDO, said here on Monday.

He was delivering the inaugural address at Tarang-2019, the 67th annual day of Naval Physical and Oceanographic Laboratory (NPOL)-Thrikkakkara, the sole DRDO laboratory in Kerala. Mr. Reddy lauded NPOL for consistent progress that it was making in developing key technologies for underwater surveillance systems. The growing scale of the lab's international initiatives was an indisputable indicator of its technology domain strength in the global arena, he said.

Mr. Reddy presented awards to personnel who made outstanding contributions during the year. K.V. Sanil Kumar and K.P.B. Moosad, both scientists-G, were awarded the Laboratory Scientist of the Year Award, while Reji John, another scientist-G and team bagged the DRDO Technology Group Award for their innovative development of magnetorheological fluid-based anti-vibration mounts, for machinery on board ships and submarines.

The Director of NPOL, S.Vijayan Pillai, presented the annual report.

https://www.thehindu.com/news/cities/Kochi/npol-comes-in-for-praise-for-developing-innovative-systems/article30324418.ece

EducationDiary.com

Wed, 18 Dec 2019

IIT Madras hosts High Energy Materials Conference and Exhibit (HEMCE 2019)

Chennai: Indian Institute of Technology Madras is hosting the High Energy Materials Conference and Exhibit (HEMCE 2019) from 16th to 18th December 2019 in collaboration with Satish Dhawan Space Centre, SHAR, and High Energy Materials Society of India (HEMSI). The conference is a forum for specialists in high energy materials from all over the world to present the latest progress and developments in the field.

HEMSI is a pioneering society committed to the cause of development of the High Energy Materials like rocket propellants, explosives and pyrotechnics. The society has an active membership of more than 1000 scientists, technologists and academicians.

Delivering the Inaugural Address on Monday (16th December 2019), His Excellency Shri Banwarilal Purohit, Governor of Tamil Nadu, who was the Chief Guest, said, “This is an important gathering of our scientific fraternity to foster research and innovations. India, with its sensitive neighbourhood, requires high energy materials such as propellants and explosives to drive national security and technological and scientific prowess. The SHAR Space Centre at Sriharikota is now well known throughout the world thanks to the work of the scientists. These Conference enables constructive collaboration between scientists across the world and help keep upto date with latest advancements in the field.”

Further, His Excellency Shri Banwarilal Purohit added, “IIT Madras has been in the forefront of research in high energy materials for three decades. It has set up advanced testing facility in the campus and we are proud of the work it has done in this field. This conference will provide a great opportunity for young minds to interact with legends in the field. The exhibition being held as part of the conference will feature many technologies developed by Indian scientists.”

HEMSI organizes international conference-cum-exhibition once in two years with the participation of around 500 delegates from India and abroad. This year, it is being held at IIT Madras.

Addressing the Conference, Shri M.S.R. Prasad, Director General, Missile and Strategic systems, Defence Research and Development Organisation (DRDO), said, “DRDO has been actively working in high energy materials for missiles and armament materials. It involves a lot of effort to develop different types of propellants for different types of missiles. HMRL, Pune, has put in a lot of R&D to develop smoke-less, and other type of propellants besides propellants for ramjet technology, which is going to be a game-changer for air launch systems. It is for the industry to ensure quality raw materials are applied so that there is high quality in propellants. Focussed R&D has to be carried in this field and DRDO has set up Centres of Excellences in various institutions including IIT Madras and IIT Bombay.”

An Armament Display along with an Industry Meet was also organized on 16th December 2019 with leaders from propellant and explosive industry had a discussion with end users of Armed forces (Lt. Gen. S S Hasbanis, PVSM, VSM, ADC) on how to take the Indian Propellant and Explosive industry forward.

Speaking later, Shri. A. Rajarajan, Director, Satish Dhawan Space Centre (SDSC), ISRO, said, “Around 60 to 70 per cent of the fuels for rockets that leave the atmosphere is spent in the first 80 km to escape earth’s gravity. We have reached a fair amount of efficiency in solid propellants and are among the leading nations in the world. The SDSC is the largest producer of solid propellants in the

country, producing nearly 2,000 tonnes. We are glad to know that industries are coming forward to work in this field. I will convey my gratitude to IIT Madras, as the SDSC has benefitted from collaboration with its faculty. We have to develop green fuels and I wish for the conference to look into this area."

Shri V. Ranganathan, Chairman, Organizing Committee, HEMCE 2019, delivered the welcome address. Prof Bhaskar Ramamurthi, Director, IIT Madras, also unveiled a souvenir for HEMCE 2019. Shri. A. Rajarajan released a CD containing the proceedings of this Conference.

Delivering the Inaugural Address, Prof Bhaskar Ramamurthi, Director, IIT Madras, said, "It is not common for an educational institution to undertake research in high energy materials. IIT Madras is among the only few higher education institutions in India to have a research group in this are as this is a very specialized area."

Shri. KPS Murthy, Director, High Energy Materials Research Laboratory (HEMRL), DRDO, said, "Since several centuries, high energy materials have played an important role in progress of the society. Today, a revolution in defence is underway. While advances in communications and technology have enhanced combat efficiency, it is the advances in high energy materials that have dictated advances in battlefield. The theme of this conference is to explore the innate potential of high energy materials. As we strive for progress, we should also development green and environment-friendly materials. High energy materials have been applied to many programs of defence and space sectors. The production of high energy materials are no longer the monopoly of the Government with private sectors also setting up huge facilities for the same."

https://indiaeducationdiary.in/iit-madras-hosts-high-energy-materials-conference-and-exhibit-hemce-2019/