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समाचार पत्रों से चयित अंश Newspapers Clippings

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

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Press Information Bureau
Government of India

Ministry of Defence

Thu, 20 Jan 2022 3:42PM

BrahMos supersonic cruise missile, with enhanced capability, successfully test-fired off Odisha coast

BrahMos supersonic cruise missile, with increased indigenous content and improved performance, was successfully test-fired from Integrated Test Range, Chandipur off the coast of Odisha at 1030 hrs on January 20, 2022. The launch was conducted by Brahmos Aerospace in close coordination with the teams of Defence Research and Development Organisation (DRDO). In this text-book flight, the missile followed the predicted trajectory meeting all mission objectives.

The flight test is a major milestone in the way forward for BrahMos programme. The highly manoeuvrable missile cruised at supersonic speed for its maximum range and all mission objectives were met. The missile was equipped with the advanced indigenous technologies and followed a modified optimal trajectory for enhanced efficiency and improved performance. The missile with the modified control system has been fine tuned to achieve an enhanced capability. This flight test was monitored by all the sensors of the range instrumentation including telemetry, radar and electro-optical tracking systems deployed across the eastern coast and the down range ships.

Teams from DRDO and NPOM, Russia participated in the test. BrahMos Aerospace, the joint venture between DRDO and NPOM, Russia, has been continuously upgrading the powerful, highly versatile BrahMos to increase its effectiveness and lethality against sea and land targets. BrahMos is the potent missile weapon system already inducted into the Armed Forces.

Raksha Mantri Shri Rajnath Singh has complimented the Brahmos, DRDO teams and industry for the successful flight test.

Secretary, Department of Defence R&D and Chairman DRDO Dr G Satheesh Reddy appreciated the scientists and engineers for continuously putting efforts to maximise the weapon systems efficiency and more focus on indigenous content. Director General, BrahMos Shri Atul D Rane congratulated the joint teams of NPOM, Russia and DRDO teams involved in the test.

<https://pib.gov.in/PressReleasePage.aspx?PRID=1791199>





पत्र सूचना कार्यालय
भारत सरकार

रक्षा मंत्रालय

Thu, 20 Jan 2022 3:42PM

ब्रह्मोस सुपरसोनिक क्रूज मिसाइल का इसकी बढ़ी हुई क्षमताओं के साथ ओडिशा तट से सफल परीक्षण किया गया

स्वदेश में निर्मित और बेहतर क्षमता प्रदर्शन के साथ ब्रह्मोस सुपरसोनिक क्रूज मिसाइल का एक परीक्षण 20 जनवरी 2022 को सुबह साढ़े दस बजे ओडिशा के चांदीपुर तट पर एकीकृत परीक्षण रेंज से सफलतापूर्वक पूरा किया गया। यह परीक्षण ब्रह्मोस एयरोस्पेस द्वारा रक्षा अनुसंधान एवं विकास संगठन (डीआरडीओ) की टीमों के साथ मिलकर किया गया था। इस मिसाइल परीक्षण के दौरान ब्रह्मोस ने मिशन के सभी उद्देश्यों को पूरा करते हुए अनुमानित प्रक्षेपपथ का अनुसरण किया।



परीक्षण की सफलता ने ब्रह्मोस मिसाइल कार्यक्रम को आगे बढ़ाने में एक प्रमुख मील का पत्थर स्थापित किया है। अपनी उच्चतम सीमा तक पहुंचने के लिए अत्यधिक कुशल इस मिसाइल ने सुपरसोनिक गति से उड़ान भरी और परीक्षण के लिए निर्धारित सभी मिशन उद्देश्यों को पूरा किया। यह मिसाइल उन्नत स्वदेशी तकनीकों से लैस है और बढ़ी हुई दक्षता तथा बेहतर प्रदर्शन के लिए इसने एक संशोधित इष्टतम प्रक्षेपपथ का ही अनुसरण किया। संशोधित नियंत्रण प्रणाली वाली ब्रह्मोस मिसाइल को बेहतर क्षमता हासिल करने के लिए और ज्यादा उन्नत बनाया गया है। इस परीक्षण की निगरानी पूर्वी तट पर और डाउन रेंज जहाजों पर तैनात टेलीमेट्री, रडार तथा इलेक्ट्रो-ऑप्टिकल ट्रैकिंग सिस्टम सहित रेंज इंस्ट्रुमेंटेशन के सभी संसरो द्वारा की गई थी।

डीआरडीओ और रूस की एनपीओएम संस्था की टीमों ने परीक्षण में हिस्सा लिया। डीआरडीओ तथा रूस की एनपीओएम के बीच संयुक्त उद्यम ब्रह्मोस एयरोस्पेस समुद्र में और जमीन के ऊपर निर्धारित लक्ष्यों पर इसकी प्रभावशीलता तथा घातक क्षमता को बढ़ाने के लिए शक्तिशाली एवं अनेक दक्षताओं से युक्त ब्रह्मोस को लगातार उन्नत बना रहा है। ब्रह्मोस एक शक्तिशाली मिसाइल हथियार प्रणाली है, जिसे पहले ही सशस्त्र बलों में शामिल किया जा चुका है।

रक्षा मंत्री श्री राजनाथ सिंह ने सफल परीक्षण के लिए ब्रह्मोस, डीआरडीओ की टीमों और रक्षा उद्योग जगत को बधाई दी है।

रक्षा अनुसंधान एवं विकास विभाग के सचिव तथा डीआरडीओ के अध्यक्ष डॉ. जी. सतीश रेड्डी ने हथियार प्रणालियों की दक्षता को अधिकतम करने और स्वदेशी सामग्री पर अधिक ध्यान देने के लिए लगातार प्रयास करने के लिए वैज्ञानिकों एवं इंजीनियरों की सराहना की। ब्रह्मोस के महानिदेशक श्री अतुल डी. राणे ने परीक्षण में शामिल रूस की एनपीओएम और डीआरडीओ की संयुक्त टीमों को बधाई दी है।

<https://pib.gov.in/PressReleasePage.aspx?PRID=1791258>

70% indigenous BrahMos cruise missile test-fired

While BrahMos was originally 50 per cent built in India, the missile tested on Thursday had an increased indigenous content of 70 per cent, say senior DRDO officials

By Ajai Shukla

New Delhi: An improved version of the Indo-Russian BrahMos supersonic cruise missile was successfully test-fired from the Integrated Test Range (ITR) at Chandipur, off the coast of Odisha, on Thursday.

The launch was conducted by Brahmos Aerospace, a joint venture between India's Defence Research & Development Organisation (DRDO) and NPO Mashinostroyeniya, the Russian rocket agency that developed the Russian part of the BrahMos.

While the BrahMos was originally 50 per cent built in India, the missile tested on Thursday had an increased indigenous content of 70 per cent, say senior DRDO officials.

In what the DRDO describes as a "text-book flight," it announced that the missile followed its predicted trajectory and met all its mission objectives.

"The highly manoeuvrable missile cruised at supersonic speed for its maximum range and all mission objectives were met. The missile was equipped with advanced indigenous technologies and followed a modified optimal trajectory for enhanced efficiency and improved performance," stated the DRDO after the flight.

The DRDO said the flight test was monitored by all the ITR range sensors, "including telemetry, radar and electro-optical tracking systems deployed across the eastern coast and the down range ships."

The BrahMos is one of the world's premier cruise missiles. It flies at a supersonic 2.8 Mach (almost 3,000 km per hour), too fast for enemy fighters to intercept and shoot down.

Conventional cruise missiles, such as the US military's Tomahawk, travel at a subsonic 890 km per hour, making them vulnerable to supersonic fighters.

In wartime, the unmanned BrahMos would be used in the opening stages for pinpoint strikes on high-value targets – such as air bases, headquarters, key roads and railways or logistics dumps – which are too heavily defended for manned fighters to attack.

Through incremental improvement and progressive testing, the BrahMos has become a key element of the strike power of all three services. It is launched from all four dimensions: ground launchers, aircraft, surface warships and submarines.

The army operates four BrahMos regiments, including missiles programmed for "steep dive" attacks across India's Himalayan frontiers. These missiles skim over high mountain ridgelines before diving steeply onto their targets on the valley floor.

Each BrahMos regiment, which is a fully mobile entity with a command post, four missile-launcher vehicles and several missile carriers to carry its complement of 90 missiles, costs some Rs 2000 crore. Each individual missile costs Rs 15 crore.

Even so, the army is on track to buy two more regiments of these lethal missiles. With the missile having been recently tested to a range of 400 kilometres, the 5th and 6th BrahMos regiments are expected to be equipped with the longer-range version.

The Indian Air Force (IAF) has also developed an air-launched version of the BrahMos that is fired from the Sukhoi-30MKI fighter. A full squadron of 21 Sukhoi-30MKIs kitted to fire the BrahMos air-launched cruise missile (ALCM), is stationed at Thanjavur, Tamil Nadu. From here, the long-range Sukhois can strike targets in the Arabian Sea, Bay of Bengal or the northern Indian Ocean.

In an exercise in May 2019, Sukhoi-30MKIs flew from Thanjavur to strike a target 3,000 km away with BrahMos missiles, refuelling in mid-flight on their way out as well as back.

That Navy has also chosen the BrahMos as its standard ship-launched cruise missile (SLCM). All the navy's frigates and destroyers are now being built to carry the BrahMos in vertical-launch canisters – eight missiles in each frigate and 16 in each destroyer. BrahMos missiles are already carried by the indigenous Project 15B destroyers, but are also being integrated into the Talwar-class frigates being built in Russia.

BrahMos Aerospace has also offered its missiles for fitment into six navy submarines that will be built under Project 75-I. In March 2013, a BrahMos was fired from an underwater pontoon, validating it as a submarine launched cruise missile (SLCM).

BrahMos Aerospace was incorporated through an Indo-Russian Inter-Government Agreement (IGA), and is named after India's Brahmaputra and Russia's Moskva rivers. It is 50.5 per cent owned by India and 49.5 per cent by Russia, the MoD told Parliament on May 9, 2007.

The MoD stated that the share capital of BrahMos Aerospace was \$250 million initially. This was increased by \$50 million to cover the cost of developing the air-launched version of the missile.

New Delhi's contribution of a little over \$150 million includes Rs 634 crore contributed by the military and Rs 370 crore contributed by the DRDO.

https://www.business-standard.com/article/current-affairs/70-indigenous-brahmos-cruise-missile-test-fired-122012100029_1.html



Fri, 21 Jan 2022

India successfully test fires new version of BrahMos missile off Odisha coast

India successfully test fired a new version of the BrahMos supersonic cruise missile off the coast of Odisha in Balasore on Thursday.

By Abhishek Bhalla, Manjeet Negi

Balasore: India successfully test fired an advanced version of the Brahmos missile with enhanced capabilities on Thursday, adding to a series of tests conducted recently by the Defence Research and Development Organisation (DRDO).

DRDO in a statement said that the BrahMos supersonic cruise missile with increased indigenous content and improved performance was successfully test fired at 10:30 am from Integrated Test Range, Chandipur off the coast of Odisha.

The launch was conducted by the Brahmos Aerospace in close coordination with Defence Research and Development Organisation (DRDO) teams. In this textbook flight, the missile followed the predicted trajectory, meeting all mission objectives.

Advanced indigenous technologies

The flight test is a major milestone in the way forward for the BrahMos programme. The highly maneuverable missile cruised at supersonic speed to its maximum range and all mission objectives were met. The missile was equipped with advanced



India successfully test fired an advanced version of the Brahmos missile with enhanced capabilities on Thursday (Photo: DRDO Twitter)

indigenous technologies and followed a modified optimal trajectory for enhanced efficiency and improved performance.

The BrahMos supersonic missile with a modified control system, has been fine tuned to achieve an enhanced capability. This flight test was monitored by all the sensors of the range instrumentation including telemetry, radar and electro-optical tracking systems deployed across the eastern coast and the down range ships.

What is BrahMos missile?

BrahMos is capable of carrying a warhead of 300 kilograms (both conventional as well as nuclear) and has a top supersonic speed of Mach 2.8 to 3 (roughly three times the speed of sound). This flight test was monitored by all the sensors of the range instrumentation including telemetry, radar and electro-optical tracking systems deployed across the eastern coast and the down range ships.

The BrahMos missile is a joint venture between India's DRDO and Russia's NPOM and both teams participated in the event. The objective has been to continuously upgrade the powerful, highly versatile BrahMos to increase its effectiveness and lethality against sea and land targets.

BrahMos is a potent missile weapon system already inducted into the Armed Forces and used by the Army, Air Force and Navy in different variants. It can be launched from submarines, ships, aircraft, or land platforms.

DRDO, defence heap praises

Defence Minister Rajnath Singh complimented the Brahmos, DRDO teams and industry for the successful flight test. Director General Brahmos Atul D Rane also congratulated the joint teams of NPOM Russia and DRDO teams involved in the test.

G Satheesh Reddy, Chairman DRDO, appreciated the scientists and engineers for continuously putting efforts to maximise weapon systems efficiency and focus more on indigenous content.

The air version of the BrahMos supersonic cruise missile was successfully test-fired by a supersonic fighter aircraft, Sukhoi 30 MK-I, last month. Last week, a missile was launched from the Indian Navy destroyer INS Vishakhapatnam off the Western coast.

<https://www.indiatoday.in/india/story/india-successfully-test-fires-new-version-brahmos-supersonic-missile-odisha-coast-1902299-2022-01-20>



Fri, 21 Jan 2022

Brahmos missile test-fired validating several new indigenous systems: DRDO

The DRDO said, "BrahMos supersonic cruise missile with increased indigenous content and improved performance was successfully test fired at 10.30 am from Integrated Test Range, Chandipur off the coast of Odisha on January 20."

Pune: The Brahmos Supersonic Cruise Missile was test-fired from Integrated Test Range (ITR) off the coast of Odisha on Thursday morning validating several new indigenous systems, the Defence Research and Development Organisation (DRDO) said.

The DRDO said, "BrahMos supersonic cruise missile with increased indigenous content and improved performance was successfully test fired at 10.30 am from Integrated Test Range, Chandipur off the coast of Odisha on January 20. The launch was conducted by Brahmos Aerospace in close coordination with DRDO teams. In this test flight, the missile followed the predicted trajectory meeting all mission objectives."

The agency further said, "The flight test is a major milestone in the way forward for BrahMos programme. The highly maneuverable missile cruised at supersonic speed for its maximum range

and all mission objectives were met. The missile was equipped with the advanced indigenous technologies and followed a modified optimal trajectory for enhanced efficiency and improved performance. The missile with the modified control system has been fine tuned to achieve an enhanced capability.”

The test on Thursday comes within days of an extended range Sea to Sea variant of BrahMos Supersonic Cruise Missile being successfully test-fired on January 11 from Indian Navy’s newly commissioned INS Visakhapatnam on the Western seaboard.

A combination of the names of Brahmaputra and Moskva rivers, BrahMos missiles are designed, developed and produced by BrahMos Aerospace, a joint venture company set up by DRDO and NPOM of Russia. The first test launch of the initial version Brahmos took place in 2001. Various types of the BrahMos including those which can be fired from land, warships, submarines and Sukhoi-30 fighter jets have already been developed and successfully tested since then.



A combination of the names of Brahmaputra and Moskva rivers, BrahMos missiles are designed, developed and produced by BrahMos Aerospace, a joint venture company set up by DRDO and NPOM of Russia.

On December 8 last year, the Air version of BrahMos supersonic cruise missile was successfully test fired from the Indian Air Force’s frontline fighter aircraft Sukhoi-30 MKI clearing the system for the serial production within the country.

<https://indianexpress.com/article/india/brahmos-missile-test-fired-validating-several-new-indigenous-systems-drdo-7733532/>



Fri, 21 Jan 2022

Rajnath Singh lauds DRDO team for successful test-fire of Advanced BrahMos Supersonic Cruise Missile

New Delhi [India], January 20 [ANI]: Defence Minister Rajnath Singh on Thursday complimented Defence Research and Development Organisation (DRDO) teams and industry over the successful test-fire of the enhanced version of the BrahMos supersonic cruise missile.

"The BrahMos supersonic cruise missile with increased indigenous content and improved performance was successfully test-fired today from Chandipur. Rajnath Singh congratulates BrahMos Missile, DRDO teams and industry for the successful flight test," Defence Ministry tweeted.

Meanwhile, Dr G Satheesh Reddy, Secretary of Department of Defence Research and Development and Chairman of DRDO appreciated "scientists and engineers for continuously putting efforts to maximise the weapon systems efficiency."

"The flight test is a major milestone in the way forward for the BrahMos programme. The highly manoeuvrable missile cruised at supersonic speed for its maximum range and all mission objectives were met. The missile was equipped with the advanced indigenous technologies and followed a modified optimal trajectory for enhanced efficiency and improved performance," reads the official statement.

"The missile with the modified control system has been fine-tuned to achieve an enhanced capability. This flight test was monitored by all the sensors of the range instrumentation including telemetry, radar and electro-optical tracking systems deployed across the eastern coast and the downrange ships," it added.

BrahMos Aerospace, the joint venture between DRDO and NPOM, Russia, has been continuously upgrading the powerful, highly versatile BrahMos to increase its effectiveness and lethality against sea and land targets.

BrahMos is the potent missile weapon system already inducted into the Armed Forces. (ANI)



<https://www.aninews.in/news/national/general-news/rajnath-singh-lauds-drdo-team-for-successful-test-fire-of-advanced-brahmos-supersonic-cruise-missile20220120210159/>

Telangana Today

Fri, 21 Jan 2022

India has Advanced Towed Artillery Gun System: DRDO

Hyderabad: Defence Research and Development Organisation (DRDO) chairman G Satheesh Reddy said India has the world's longest Advanced Towed Artillery Gun System with a range of more than 48 kms. Final trials were being conducted and very soon it would be inducted into the armed forces, he said. "This was one technology, which was eluding us earlier but we could develop our own kind now. I can proudly say this is world longest range gun," said Satheesh Reddy here on Thursday.

He was delivering an online lecture on "Accelerating Defence R&D for Atmanirbhar Bharat" as part of Administrative Staff College of India's public lecture series. Speaking on the occasion, he said India was set to join the ranks of key countries in the world in the coming years in defense products manufacturing and exports.

Already, steps have been taken in this direction. Over the past few decades, research has shown that India has achieved self-sufficiency in the manufacture of missiles, radars, aircraft, army vehicles, and communication systems, he said. Similarly, India was among the top countries in the

world to have ballistic missile defense systems. After United States, Russia and China, India has emerged as the country equipped with the system of direct demolition of satellites.

“Gradually, we are moving from importing to exporting defense products. It is our endeavor to develop all the systems to be equipped with AI technology,” said Sateesh Reddy, revealing that the BrahMos updated system was successfully launched again on Thursday.

Lot of activity was being taken up in the cyberspace solutions. One cannot be ignorant of this space and to ensure secured solutions, lot of things, including hardware, software and operating systems are being developed, he said. “Similarly, we are encouraging private companies to manufacture defense products. DCPD (Development from Production – Partner) policy was brought,” Sateesh Reddy said, adding already a few missile and bomb manufacturing projects have been sanctioned to some private companies in Hyderabad.

This apart, nearly two thousand companies were currently in the manufacturing of defense products across the country.

He said as per Prime Minister Narendra Modi’s instructions, five specialised laboratories were set up at five locations, including Hyderabad, to encourage young scientists under the age of 35 to further promote research in the defense sector. ASCI Chairman Padmanabhayya said that only one per cent of GDP was spent on research. He said the DRDO had a crucial role to play in strengthening the national defense system.

The conference was attended by ASCI Director General (in-charge) Dr Nirmalya Bagchi and others.

<https://telanganatoday.com/india-has-advanced-towed-artillery-gun-system-drdo>



Fri, 21 Jan 2022

Artificial intelligence, machine learning plays vital role in defence: DRDO director

PM Kurulkar was addressing the students and researchers at the inauguration ceremony of the two-day ‘National Conference on Communication, Computational Intelligence and Learning’ (NCCCIL)

Pune: Director, Research and Development Establishment (R&DE) of Defence Research and Development Organisation (DRDO) PM Kurulkar said advanced technology is evolving through artificial intelligence, machine learning and in-depth research is required to be done to meet the changing challenges in the field of security, biotechnology, communication sector among other sectors.

“Artificial intelligence and machine learning are playing a vital role in the field of defence. Students need to develop a tendency to do research and innovation,” said Kurulkar while addressing the students and researchers at the inauguration ceremony of the two-day ‘National Conference on Communication, Computational Intelligence and Learning’ (NCCCIL).

The conference is jointly organised by the department of information technology of the Army Institute of Technology (AIT), Dighi and the All India Council of Technical Education (AICTE).

The conference reviewed about 64 research papers (more than 150 participants) out of which 43 papers were selected and 34 were registered.



Artificial intelligence and machine learning are playing a vital role in the field of defence. Students need to develop a tendency to do research and innovation, said DRDO director PM Kurulkar (REPRESENTATIVE PHOTO)

Due to the prevailing Covid-19 pandemic, the conference is being conducted online.

Selected research papers will be published in three peer-reviewed journals i.e. The Institution of Electronics and Telecommunication Engineers (IETE), Web of Science Group and CRC Press.

Kurulkar said, "The intelligence of Indians is immeasurable. With the right combination of technology and intelligence, we can make impossible things possible. The efforts made by the Indians during the coronavirus pandemic and the three vaccines developed are indicative of this."

"The discovery of three effective vaccines against Covid-19 and its mass production is a guideline for the world. It is a matter of joy for all that India is being looked upon with respect from all over the world. He also expressed the expectation that the curriculum would change with the changing challenges and advancement of technology." he said.

<https://www.hindustantimes.com/cities/pune-news/artificial-intelligence-machine-learning-plays-vital-role-in-defence-drdo-director-101642700793296.html>



Fri, 21 Jan 2022

R-Day: Delhi converted into no-fly zone, anti-drone teams deployed. Know about security preparations

The national capital has also been converted into a no-fly zone i.e. flying of drones, UAVs, hot air balloons have been prohibited. Anti-drone teams have also been put in place.

New Delhi: As the nation gears up for the Republic Day celebrations, the Delhi Police and the security agencies are sparing no effort to secure the national capital amidst various threats.

Delhi Police Commissioner Rakesh Asthana along with Special Commissioner of Police Satish Golcha and DCP New Delhi Deepak Yadav visited the Rajpath area to review the security arrangement ahead of the Republic Day celebrations on January 26.

In a bid to tackle the various threats, security arrangement has been tightened with over 50,000 security personnel being deployed and a central control room set up with over 500 CCTV cameras fitted with facilitating facial recognition for enhanced security.

The national capital has also been converted into a no-fly zone i.e. flying of drones, UAVs, hot air balloons have been prohibited. Anti-drone teams have also been put in place in order to check for any unattended flying objects in the airspace.

Speaking to ANI, Special Commissioner, Delhi Police Satish Golcha said, "Latest technology is being used to prevent any possible drone threats. Apart from this, the face recognition database has also been aligned with CCTV cameras. Terror threats of all kinds have been identified and a multi-layered security arrangement has been put in place."

With regards to tackling drones and UAVs, the Delhi Police is working along with DRDO and NSG. We are keeping a close watch on such activities, said Golcha. "We have briefed our staff extensively about suspected persons and objects. We are also coordinating with the neighbouring states for precise arrangements as well," he added.

DCP New Delhi Deepak Yadav told ANI, "Verification of the people staying in hotels in the nearby areas is also taking place. Central Vista construction is one of the major challenges before the security agencies and hence the verification of the construction workers is being done again so as to leave no stone unturned to make the Republic Day parade to go on smoothly."

<https://news.abplive.com/news/india/republic-day-delhi-converted-into-no-fly-zone-anti-drone-teams-deployed-cp-rakesh-asthana-reviews-security-preparations-1507698>

सिर्फ ब्रह्मोस से नहीं बनेगी बात

ओडिशा के चांदीपुर से सुपरसोनिक ब्रह्मोस क्रूज मिसाइल का गुरुवार को परीक्षण किया गया, जो सफल रहा। हाल में फिलीपींस से भारत को इस मिसाइल का एक ऑर्डर भी मिला है। यह ऑर्डर 37.5 करोड़ डॉलर का है। ब्रह्मोस मिसाइल को भारत ने रूस के साथ मिलकर बनाया है। इसलिए वह किसी भी देश को इसे बेचने को लेकर एकतरफा फैसला नहीं कर सकता। इसके बावजूद फिलीपींस से मिला यह ऑर्डर देश के डिफेंस एक्सपोर्ट के लिहाज से बड़ी बात है।

माना जा रहा है कि इंडोनेशिया और वियतनाम भी भारत से यह मिसाइल खरीद सकते हैं। लेकिन सच यह भी है कि हथियारों के निर्यात में भारत बहुत छोटा प्लेयर है। 2018-19 में भारत ने 1.5 अरब डॉलर के हथियार दूसरे देशों को बेचे थे, जो इससे पिछले वित्त वर्ष के 66 करोड़ डॉलर के मुकाबले शानदार ग्रोथ थी। सरकार ने इसे आने वाले कुछ वर्षों में 5 अरब डॉलर तक ले जाने का लक्ष्य रखा है, लेकिन इसे हासिल करना आसान नहीं होगा। हथियारों के निर्यात के मामले में अमेरिका, रूस, यूरोपीय संघ, चीन और इस्राइल अभी दुनिया में काफी आगे हैं। भारत ऐसे टॉप 10 देशों में भी शामिल नहीं है।



Brahmos cruise missile Test: ब्रह्मोस ने हथियारों के निर्यात के मामले में एक उम्मीद जगाई है, लेकिन इसमें अमेरिका की ओर से भी बाधा खड़ी हो सकती है

ब्रह्मोस ने हथियारों के निर्यात के मामले में एक उम्मीद जगाई है, लेकिन इसमें अमेरिका की ओर से भी बाधा खड़ी हो सकती है। असल में इधर यूक्रेन को लेकर रूस और अमेरिका के बीच तनाव बढ़ रहा है। इसकी शुरुआत 2014 में रूस के क्रीमिया को यूक्रेन से अलग करने से हुई थी। इसके बाद अमेरिका में काटसा नाम का एक कानून लाया गया, जिसका मकसद रूस से हथियारों के निर्यात को कम करना है। इस कानून के जरिये अमेरिका दूसरे देशों को रूसी हथियार खरीदने से रोकता है।

हाल में भारत ने रूस से एस-400 एंटी मिसाइल सिस्टम खरीदा है। अमेरिका ने भारत को इस सौदे से रोकने की कोशिश की थी, लेकिन सफल नहीं रहा। अभी वहां इसे लेकर भारत पर प्रतिबंध लगाने को लेकर बहस चल रही है, लेकिन ऐसा लगता है कि चीन के विरुद्ध रणनीतिक सहयोगी माने के कारण भारत इससे बच जाएगा। अब चूंकि ब्रह्मोस का निर्माण भी रूस के साथ मिलकर किया गया है, इसलिए इस अमेरिकी कानून के दायरे में इसे भी लाया जा सकता है। अगर ऐसा हुआ तो इससे भारतीय डिफेंस एक्सपोर्ट को झटका लगेगा।

भारत को इस मामले में आगे बढ़ने के लिए नई तकनीक विकसित करनी होगी। इस मामले में डीआरडीओ और इसरो से काफी मदद मिल सकती है। भारत ने हाल में रक्षा क्षेत्र में निजी कंपनियों की भागीदारी बढ़ाने की भी पहल की है। इसके लिए भारतीय कंपनियां विदेश की जानी-मानी कंपनियों से साझेदारी कर रही हैं। अगर यह पहल कामयाब रही तो इससे डिफेंस एक्सपोर्ट के क्षेत्र में भारत बड़ी ताकत बन सकता है।

<https://navbharattimes.indiatimes.com/navbharatgold/breaking-news-in-hindi/india-successfully-test-fired-new-brahmos-supersonic-cruise-missile/story/89016356.cms>

The strategic logic behind India's sale of BrahMos Missiles to the Philippines

The strategic aspects of the BrahMos sale and India's assistance to Southeast Asian countries should not be minimized.

By Rajeswari Pillai Rajagopalan

In a first, India has entered into agreement with the Philippines for the sale of BrahMos supersonic cruise missile. Philippine Secretary of Defense Delfin Lorenzana, in a notice of award on December 31 to BrahMos Aerospace Private Ltd, detailed the Philippines' acceptance of the deal for \$374 million. If it works out, it will be the first major Indian defense sale of indigenously produced equipment.

Although India has a large domestic defense manufacturing base as well as a large defense research entity, the Defense Research and Development Organization (DRDO), New Delhi has been unsuccessful in breaking into the global defense market as a supplier. Indeed, India's domestic defense industry is not even able to supply its own forces. It remains heavily dependent on imported weapons and for decades has been one of the world's largest arms importers. This is despite India manufacturing Asia's first indigenous jet fighter in the 1960s, and despite political commitment to domestic defense research and development since the 1950s.



Credit: [Wikimedia Commons](#)

India's defense industry itself is large but it caters mostly to India's massive armed forces. Much of the equipment it produces is manufactured under license from foreign firms. Over the last few years, the Indian government has once again emphasized domestic defense research and manufacturing as well as exports. As a consequence, India's defense exports have risen and the Indian government has set an ambitious target of \$5 billion in exports by 2025. India has also begun to emphasize private sector participation in the defense industry.

The BrahMos itself was developed in cooperation with Russia and is based on the Russian P800 Onyx/Yakhont cruise missile. The current versions have a range of about 500 km but the export variant of the missile has a range of 290 km in order to keep it under the Missile Technology Control Regime (MTCR) restrictions of 300 km. After first being tested in 2004, the missile was inducted into the Indian services, beginning in 2007. Different versions of the missile are in service with the Indian Army, Air Force, and Navy.

The version being supplied to the Philippines is a naval version and the Philippine defense secretary said that "the Coastal Defense Regiment of the Philippine Marines will be the primary employer of this modern strategic defense capability of the Armed Forces of the Philippines." Explaining the agreement on a social media post, Lorenzana said, "As head of procuring entity (HOPE), I recently signed the Notice of Award for the Philippine Navy Shore-Based Anti-Ship Missile Acquisition Project. ... it includes the delivery of three batteries, training for operators and maintainers as well as the necessary Integrated Logistics Support (ILS) package."

Other than India's interests in arms exports, it is also noteworthy that India is supplying the missiles to Southeast Asia, specifically to a country that is currently in a territorial dispute with China. India has extended security assistance to a number of countries in the region. Other countries including Vietnam, Indonesia, and Thailand are interested in buying the BrahMos missiles, too. Reportedly discussions with Indonesia are at an advanced stage with it being "on top

of the agenda” during the Indonesian defense minister’s visit to India in July 2020. India has extended defense and security assistance to Vietnam, training its navy in Kilo-class submarines. In addition, India has also provided Lines of Credit to Vietnam to buy Indian defense equipment. India is also building 12 High Speed Guard Boats under these Line of Credit, five of which are being built by the Indian company, Larsen & Toubro in India, whereas the remaining seven are being built by Hong Ha Shipyard Company in Vietnam. The first of these vessels were launched in December 2020 during the summit meeting between the prime ministers of India and Vietnam.

The strategic aspects of the BrahMos sale and India’s assistance to Southeast Asian countries should not be minimized. Given that these countries are facing a threat from China and have active ongoing disputes with the Asian giant, helping them increases the burden that China faces in the South China Sea. It is, of course, in India’s interest to make sure that China has enough problems in its backyard to divert its attention and reduce the pressure that it can bring to bear on India and the Indian Ocean. India’s ongoing territorial dispute with China makes this a lot more important, as do China’s growing naval capabilities.

Supplying missiles such as the BrahMos is one way to apply China’s own strategy against itself. Over the last two decades, China has emphasized anti-access/area denial (A2AD) with the U.S., building capabilities that threaten the stronger U.S. Navy in the South China Sea. Supplying anti-ship missiles such as the BrahMos helps ensure that smaller countries can also employ their own A2AD strategies against China.

<https://thediplomat.com/2022/01/the-strategic-logic-behind-indias-sale-of-brahmos-missiles-to-the-philippines/>



Fri, 21 Jan 2022

Why India should make sure Brahmos Missile deal with the Philippines goes through

The deal is surely going to rile China, which will try to put pressure on the Philippines through other means.

By Rupakjyoti Borah

In a major development, the Philippines has accepted a proposal worth \$374.9 million USD from the Indo-Russian consortium BrahMos Aerospace to supply a shore-based anti-ship missile system for its navy.

The missile in question, BrahMos, has a 290-km range, which makes it ideal for Manila in the South China Sea region, where Beijing has built fortifications on many of the artificial islands it has constructed.

The BrahMos is a joint venture between the Russian firm NPO Mashinostroyeniya and India’s premier Defense Research and Development Organization (DRDO). New Delhi holds a 50.5% stake in the joint venture with an initial contribution of \$126.25 million USD, while Moscow holds a 49.5% stake with an initial contribution of \$123.75 million USD.

For India and the Philippines, it marks a leap of faith. Both nations have been mired in territorial conflicts with China.

In the case of the Philippines, the conflict has been in the maritime arena; in the case of India, the dispute has been along its land borders. The conflict between India and China turned violent in June 2020, when troops from the two sides clashed in the icy heights of the Himalayas, resulting in casualties on both sides for the first time in 45 years.

Meanwhile, the Philippines has had several run-ins with China in the last couple of years. Civilian vessels from the so-called Chinese “maritime militia” have been harassing fishing vessels from the Philippines as well as Philippine naval vessels.

China's Encroachment into Philippine Territory

In January 2013, the Philippines formally started arbitration proceedings against China's claim on all territories within the so-called "nine-dash line" that includes Spratly Islands. Manila recognized the claims as "unlawful" under the United Nations Convention on the Law of the Sea (UNCLOS). Finally, in July 2016, the Permanent Court of Arbitration at The Hague agreed.

The court pronounced its verdict that there was no evidence that China had historically exercised exclusive control over the key waterway. It did not stop China from continuing to build artificial islands with military fortifications. Since then, the relations between the Philippines and China have swayed back and forth.

Philippine President Rodrigo Duterte tried to improve relations with China, but without much success. China has aggressively used its Belt and Road Initiative (BRI) to gain a foothold in the infrastructure of countries like the Philippines, and those countries have sometimes been at the receiving end of Beijing's territorial ambitions.

Recently, however, Manila has been vocal against Chinese belligerence in the region. Earlier in 2022, President Duterte's legal counsel warned that Chinese moves in the region could damage ties and lead to "unwanted hostilities," using some of the strongest words to come from the Duterte camp.

Why the Anti-ship Missile Deal is Important

This anti-ship missile deal is important since it may lead to similar calls by other Southeast Asian nations that have been at the receiving end of China's intrusions. For example, countries like Vietnam have evinced an interest in the BrahMos missile.

In addition, this is a game-changer for Indo-Russian joint manufacturing in the field of defense and will mark the first major export of weapons systems by India.

As and when this contract is fulfilled, this will give a big fillip to Delhi's "Make-in-India" initiative, which has been aggressively promoted by the Indian government. Already one of the world's biggest arms importers, New Delhi signals that it is now aiming at becoming a major arms exporter.

It is also a major boost for India's "Act-East Policy," which aims to reinvigorate historical ties with countries in Southeast and East Asia. A deal of this kind will also bring much-needed revenue for its military-industrial complex.

Challenges

Several challenges could develop before the deal becomes a reality.

First, the deal is surely going to rile China, which will try to put pressure on the Philippines through other means. Both the Philippines and India need to be careful about this and will have to work out a concerted strategy so that the deal does not fall through.

Second, the Philippines will have to take into consideration how some of its ASEAN partners respond to the developments. Some ASEAN members have been inching closer to Beijing, and they may also throw a spanner in the works.



China's territorial claims in the South China Sea were rejected by a tribunal in The Hague

Third, the fact that a Russian consortium is also involved in the BrahMoS manufacturing process means that the United States could also object. When India signed a deal for the S-400 air defense system from Russia, for example, Washington raised an objection.

Fourth, this could also become an issue in the upcoming Philippine presidential elections, which are slated for May 2022.

Japan's Role

The Philippines is an important player for Japan's Free and Open Indo-Pacific vision. Tokyo has been sending help to Manila in the form of vessels and equipment for the Philippines Coast Guard (PCG) through Japanese Official Development Assistance (ODA). Among others, these include multi-role response vessels, high-speed small boats, coastal surveillance radars, and floating pontoons for high-speed boats.

Later in 2022, the PCG will take the delivery of two 97-meter vessels built by Japan's Mitsubishi Shipbuilding Co. Ltd. These are also being funded through Japanese ODA.

Japan has invested heavily in the infrastructure sector in the Philippines and provides an alternative to China's much-vaunted BRI, which the Philippines is a part of.

The Road Ahead

For New Delhi, this will be a test case. As they say, "The proof of the pudding is in the eating."

India has the potential to become a major arms exporter in the years to come. Hence, it needs to make sure that this deal and delivery goes through on time.

Needless to say, countries like India and Japan have an important role in helping fellow democracies like the Philippines, both in the security and the economic domains.

(Dr. Rupakjyoti Borah is a senior research fellow with the Japan Forum for Strategic Studies, Tokyo. The views expressed here are personal.)

<https://japan-forward.com/why-india-should-make-sure-brahmos-missile-deal-with-the-philippines-goes-through/>

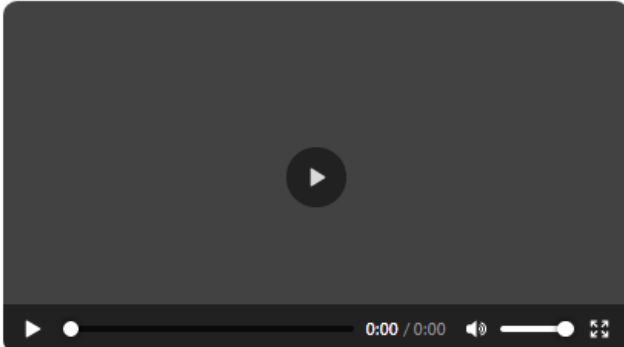
DRDO on Twitter



20 January 2022

PB NS **Prasar Bharati News Services** ✓ @pbns_india 20 Jan 2022

WATCH | DRDO successfully test-fired 'BrahMos' Missile from ITR, Chandipur, Odisha today. The mission validated many new indigenous systems successfully demonstrating enhanced capabilities.



DRDO ✓ @DRDO_India · 17h

BrahMos Missile was successfully test fired from ITR, Chandipur today. The mission validated many new indigenous systems successfully demonstrating enhanced capabilities. #MakeinIndia @DefenceMinIndia @BrahmosMissile @SpokespersonMoD #AtmaNirbharBharat



20 January 2022

DRDO ✓ @DRDO_India · 15h

BrahMos supersonic cruise missile, with enhanced capability, successfully test-fired off Odisha coast pib.gov.in/PressReleasePa...



20 January 2022



Fri, 21 Jan 2022

IAF Chief holds meet with counterparts of Indo-Pacific region, discusses logistical, combat challenges

New Delhi [India], January 20 (ANI): Chief of Indian Air Force Air Chief Marshal VR Chaudhari on Thursday held a virtual meeting with the counterparts of various Air Forces of the Indo Pacific region and discussed the challenges of distributed logistics and agile combat employment while operating from austere locations.

"A virtual teleconference was held today between #CAS and #AirChiefs of various Air Forces of the Indo Pacific region. The challenges of distributed logistics and agile combat employment while operating from austere locations were discussed,"

The meeting was held with the Air Force chiefs of Canada, France, Germany, Taiwan, Singapore, Japan, Australia, Sri Lanka, Philippines, Vietnam, New Zealand, Maldives, Malaysia, and others. (ANI)



<https://www.aninews.in/news/national/general-news/iaf-chief-holds-meet-with-counterparts-of-indo-pacific-region-discusses-logistical-combat-challenges20220120184552/>

German, Indian Navy Chiefs discuss ways to strengthen cooperation

New Delhi Navy Chief of Germany, Vice Admiral Kay-Achim Schonbach met Indian Navy Chief Admiral R. Hari Kumar discussed avenues to strengthen naval cooperation and enhance inter-operability.

On arrival Vice Admiral Kay-Achim Schonbach was welcomed with an impressive Guard of Honour at South Block lawns.

Schonbach also met several other security and external affairs officers in New Delhi. He also met Foreign Secretary Harsh Vardhan and discussed ways to enhance bilateral defence relationship.

Last year in August, Navies of India and Germany carried out a joint exercise, which included helicopter landings and search and seizure operations, in Gulf of Aden near Yemen. The Indian Navy's frigate Trikanth exercised with German frigate Bayern in the Gulf of Aden.

The exercise enhanced inter-operability and facilitated exchange of best practices between partner navies in maritime domain.

<https://ommcomnews.com/india-news/german-indian-navy-chiefs-discuss-ways-to-strengthen-cooperation>



Swedish firm's AT4 single-shot system picked for Army, IAF

Operated by a single soldier, the AT4 single-shot system is designed for use against tanks, helicopters, landing craft, structures and personnel. It has an 84 mm calibre warhead.

New Delhi: India has selected Swedish defence company Saab's AT4 weapon for its army and air force after a competitive programme for buying a single-shot weapon, the company announced on Thursday.

Operated by a single soldier, the AT4 single-shot system is designed for use against tanks, helicopters, landing craft, structures and personnel. It has an 84 mm calibre warhead.

"The Indian armed forces are a new customer for AT4. This order includes the AT4CS AST, which can be fired from confined spaces such as inside buildings, bunkers and other urban environments. It offers a tandem warhead with a breach or blast mode, which is optimised to defeat enemies within buildings and to destroy structures, which can create a point of access into them," Saab, the Swedish defence major, said in a statement.



Indian Army soldiers are on high alert and keeping a strict vigil along the Line of Control. (Representational image)(PTI Photo)

The Indian army has been using the Swedish-origin Carl-Gustaf weapon system since the 1970s.

The AT4 systems are lightweight, single-shot, fully disposable and characterised by ease of use and handling, said Ola Rignell, chairman, Saab India.

<https://www.hindustantimes.com/india-news/swedish-firm-s-at4-single-shot-system-picked-for-army-iaf-101642727217609.html>



Fri, 21 Jan 2022

Indian Navy hones anti-submarine warfare skills in Exercise Sea Dragon

Exercise sees participation of Quad countries, Canada and S. Korea

By Dinakar Peri

New Delhi: An Indian Navy P-8I long-range maritime reconnaissance aircraft participated in multinational Anti-Submarine Warfare (ASW) Exercise Sea Dragon-22 at Guam in the U.S. that saw the participation of Quad countries, Canada and South Korea. The two-week exercise began on January 5 and concluded on January 20.

“The exercise was aimed to enhance interoperability among participating nations by evolving common tactics in response to emerging traditional and non-traditional security challenges in maritime domain,” the Navy said in a statement.

Naval aircraft from the U.S., India, Japan, Canada, Australia and South Korea – which included P8A, P8I, P1, CP140 Aurora and P3C Orion maritime reconnaissance aircraft practised high-end ASW skills. “The aircrew also undertook professional interaction with other participants from friendly foreign countries,” the Navy stated.

Sea Dragon is an annual, multi-national high-end exercise hosted by the U.S. Navy. This year, it had deployed two P-8A Poseidon aircraft.

Sea Dragon-22, primarily centering on ASW training and excellence, culminates in over 270 hours of inflight training; ranging from tracking simulated targets to the final problem of tracking a live U.S. Navy submarine, the US. Navy 7th Fleet said in a statement before the exercise commenced.

“During classroom training sessions, pilots and flight officers from all countries build plans and discuss tactics incorporating the capabilities and equipment of their respective nations,” the statement noted. During the exercise, each event is graded, and the nation scoring the highest total points will receive the coveted Dragon Belt award.

Chinese naval presence

ASW has also been a focus area among India, Australia, Japan and U.S. in the annual Malabar naval exercise, especially in the backdrop of increasing Chinese naval presence, especially submarines, in the Indian Ocean Region (IOR).

The Indian Navy’s tempo of exercises and engagements has significantly gone up in recent years coinciding with the shift in global attention to the Indo-Pacific. Maritime Domain Awareness has emerged as a major area of cooperation with friendly countries in the IOR.

In addition to white shipping information, it also includes information on military and naval assets of hostile/adversarial countries; assessment of maritime activities of mutual concern and activities related to transnational maritime based threats, as reported by *The Hindu* recently.

These engagements are further amplified by the bilateral logistics agreements, Navy to Navy agreements and information sharing agreements that India has concluded with several countries.

<https://www.thehindu.com/news/national/indian-navy-hones-anti-submarine-warfare-skills-in-exercise-sea-dragon/article38300399.ece>

ISRO tests liquid engine for Gaganyaan mission to check engine function

The test, which was conducted at the Indian Space Research Organisation((ISRO) Propulsion Complex in Mahendragri, Tamil Nadu, was done to see how the engine performed in conditions that were not optimal, such as change in the fuel-oxidiser ratio or pressure in the fuel chamber.

By Anonna Dutt

New Delhi: The Indian space agency on Thursday successfully conducted a 25-second qualification test for its liquid propellant-based Vikas engine to be used under the Gaganyaan mission.

The test, which was conducted at the Indian Space Research Organisation((ISRO) Propulsion Complex in Mahendragri, Tamil Nadu, was done to see how the engine performed in conditions that were not optimal, such as change in the fuel-oxidiser ratio or pressure in the fuel chamber. “The performance of the engine met the test objectives and the engine parameters were closely matching with the predictions during the entire duration of the test,” ISRO said in a release.

Three more tests will be conducted, totalling a duration of 75 seconds, to test the engine under varying conditions. Then, a long-duration test for 240 seconds will be conducted to qualify the engine for carrying humans to space.

Two Vikas engines have already been tested for 240 seconds each under optimal operating conditions. This is one of the three engines that the space agency will have to qualify to finally make the entire launch vehicle human rated.

The space agency conducted a qualification test for 720 seconds of its cryogenic upper stage earlier this month. The engine will undergo four more tests totalling a duration of 1,810 seconds and another engine will under-go two short duration and one long-duration test before the cryogenic stage is qualified for Gaganyaan mission.

This is especially important after the failure of the GSLV F10 mission in August last year, when the cryogenic engine did not ignite due to a small drop in pressure in the fuel tank, even though the cryogenic engine for the GSLV MkIII is different.

The first stage of the launch vehicle, which used solid propellant, is already qualified for the mission, according to experts. ISRO is targeting the launch of at least one of the two planned uncrewed mission before this Independence Day, while the crewed mission is planned for next year.

<https://indianexpress.com/article/india/isro-gaganyaan-mission-engine-function-7734354/>

ISRO Chairman Exclusive: “With support of all stakeholders - India & ISRO will have greater times ahead”

By Sidharth MP

Story highlights

According to Dr Somanath, the process of facilitating the opening up of India’s space sector is a long-drawn one

Chennai: Opening up of India’s predominantly state-run space sector to private firms, stakeholders and enabling it in true spirit are the top priorities of Chairman, Indian Space Research Organization (ISRO), Dr S. Somanath. In an exclusive conversation with WION/Zee Media, the Chairman shared his vision for the ongoing tenure, his thoughts on Indian re-usable rocket projects, his expectations from Indian start-ups and conglomerates, the ambitious Gaganyaan Programme and its related International collaborations and much more.

According to Dr Somanath, the process of facilitating the opening up of India’s space sector is a long-drawn one. This comprises putting in place specific legislations, policies for the new entrants, offering them opportunities, while also minimising their hurdles in their journey of entrepreneurship and innovation.

“My role will be to set in motion the process now, so as to see results in a few years of time. These are - new industries coming up and launching rockets from India, satellites being built by private companies, applications being used to meet the global demand etc.”



New ISRO chief S Somnath Photograph:(Agencies)

Queried about the Indian share of the USD440bn global space economy being less than 2 per cent and ISRO’s measures to improve it, he said, the important part was to address the needs of users in India in an economical manner.

These users include the government of India, strategic agencies and commercial users. Mentioning that rockets and satellites were only a small part of the global space economy, he emphasised on earning revenue by providing space-based services and delivery of applications to users.

While he did not wish to get into numbers, he affirmed that India’s target would be to expand its share.

On the engineering goals of ISRO, in building advanced rockets, engines and more efficient satellites, he said that ISRO had to decide on future engines based on the future rockets that are being envisioned.

“We are now trying to figure out the cost-effectiveness and design complexities of future engines of different classes and will be working on them in future. With current engines, there is a limit to which we can grow in launch vehicle (lift) capacity.”

Regarding satellites, he said that India had infrastructure (bus structures) for satellites weighing as less as 20-30kg to 5tons.

However, he admitted the need to innovate and make satellites more compact, inculcate advanced electronics and add more functionality in the given space.

“Winged re-usable rocket still has some merit and provides certain operational flexibility, we continue to work on winged reusable rockets and we have an ongoing programme to work on an orbital re-usable vehicle. We have not started working towards making current expendable rockets

into re-usable rockets, we have to initiate that programme and it will be linked with engines we need to develop,” he replied when asked to elaborate on India’s efforts towards re-usable rockets and new-age methods of launching from jumbo jets etc.

Dr Somanath feels that Indian private companies (start-ups and established giants) need to play a larger role by involving themselves in space applications, building and launching of spacecrafts and rockets etc. The veteran rocket scientist also sees great promise in 10 Indian space start-ups, that are operating in different domains.

“It is very high, they are enthused and active in working on it... It is not easy.. a lot of knowledge is required... Share of knowledge from ISRO is necessary for them to succeed.. I am looking forward to seeing them succeed, with their initiative and with support of skilled people created by the space programme” he said, when asked about the prospects of Indian space start-ups launching their rockets in the next two years.

Regarding ISRO’s initiatives to remain competitive in a global market where launch cost (per kg to orbit) was drastically falling, he said, it was about making the systems simpler, using more commercial items to make manufacturing processes easy, conceiving re-usability to use rockets like planes etc.

“In ISRO we are already working on the winged rocket, vertical take-off and landing is the next step, for which, we need a (throttling) capable engine.. In the absence of that engine, we will start a tech demonstration programme and actual rocket development,” he explained about the future.

He also agreed that ISRO’s upcoming Small Satellite Launch Vehicle (SSLV) was a step in the direction of bringing down launch costs and increasing accessibility to space.

“We wanted a simple rocket that can be built and operated by industry, without much complexity. Hence, SSLV is significantly simpler than the current rocket fleet (PSLV, GSLV) and it can be manufactured by smaller industries, as it uses simpler systems and commercially available materials.

So, it can be transferred 100 per cent to industry and it will be cost-efficient” he added.

Asked to elaborate on the human rating of GSLV Mk3 rocket for India’s Gaganyaan Human Spaceflight mission, the former director of Vikram Sarabhai Space Center explained that the GSLV Mk3 rocket was already capable of being human-rated, whereas the same cannot be done for every rocket.

Simply put, the human rating is the process of transforming a rocket meant for carrying cargo into one that can reliably carry astronauts. “Minimising acceleration, sound level, shock, these are already into the rocket. Further, we need to ruggedise marginalities, possibilities of failure anywhere in design are corrected, the entire rocket manufacturing process is being made more quality sensitive, we do a large number of tests to prove if any higher level of confidence is to be built,” he said.

On the failsafe measures being engineered, he added that there were in-built measures and intelligence to detect anomalies.

“If one system fails, the next should take over, and if the second fails, the third must take over... and still continue the mission or abort. In the human-rated rocket, most critical systems are going to be quadruple redundant.. there are going to be four systems, so that, in no way will there be a possibility of a major catastrophe,” he explained.

As India’s most ambitious spacefaring mission, Gaganyaan is a leading example of India’s collaboration with agencies from all major spacefaring nations. Sharing his views on the same, Dr Somanath said that it involved procurement, technology transfer and working together with different nations.

“In rocket design, we are seeking the support of various countries. I am directly dealing with various facilities across the globe for wind tunnel testing, which we need to characterise the vehicle and crew module. Human spaceflight requires much more sharing of knowledge, there are experts across nations who can help us. We will continue to seek support from US, Russians, Japanese,

Europeans etc. We also need global support for tracking, rescue, communications, and even emergencies,” he stated.

While all foreign space agencies are ready and happy to help in various aspects, there are also critical systems, technologies that will not be shared or offered for purchase.

These include environmental control and life support systems, crew module, landing parachute systems, propulsion etc.

However, space suits and seats can be procured from international agencies. Indian astronauts are also undergoing training in established foreign facilities.

As Chairman, he also extolled ISRO as an organisation for the strong team and centre-level leadership that is in place. He sees this tenure as an opportunity to inspire his team and make their vision a reality, by creating a support system. He expressed confidence that team ISRO would come up with greater ideas, whereas, he as Chairman would figure out the national and futuristic importance of the ideas and seek government support to implement them. With the support of the people of India and all stakeholders of the space programme, he firmly believes it will become a reality.

“My work is centred around rockets, but I’m interested in everything in space - from rockets to satellites to space science and mechanical engineering... I am passionate and I will learn as much as I have learnt so far and even more...” Dr S. Somanath signs off with a confident smile, as we wish him and ISRO all success - on Earth, in orbit and beyond!

<https://www.wionews.com/india-news/isro-chairman-exclusive-with-support-of-all-stakeholders-india-isro-will-have-greater-times-ahead-446287>

