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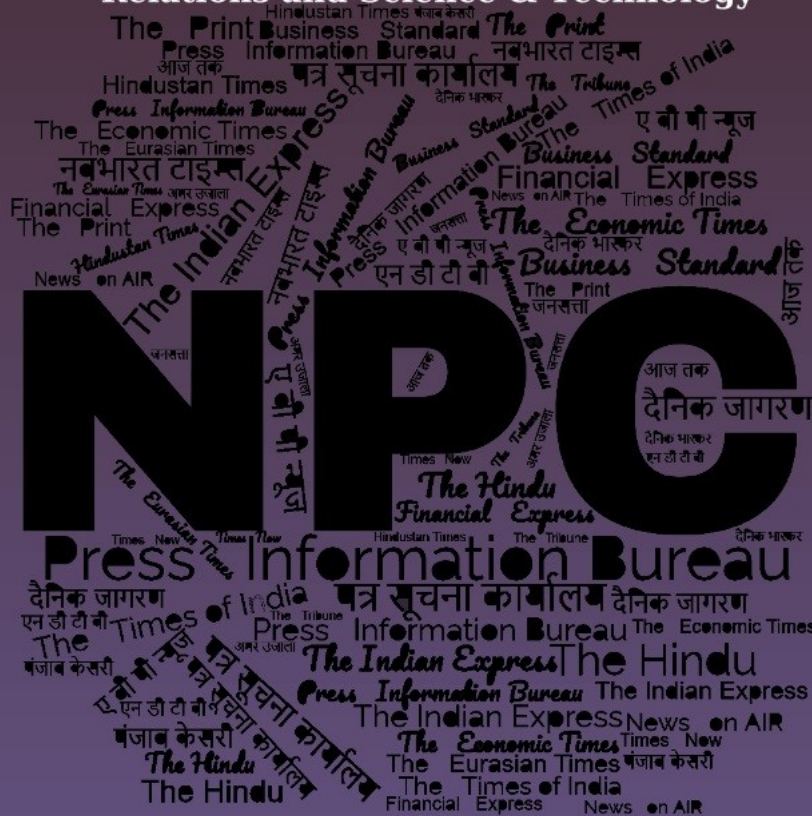
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# समाचार पत्रों से चयनित अंश Newspapers Clippings

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

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## **Self-reliance can't be at cost of nation's security, says Air Force vice chief**

Indian Air Force vice chief Air Marshal AP Singh on Friday said “atmanirbharta” (self-reliance) in the defence manufacturing sector can't be at the cost of the country's security, while highlighting the critical role of the domestic industry in accomplishing the self-reliance goals so that the military doesn't have to look for weapons and systems elsewhere to stay battle ready. He said that there could be compulsions to deviate from the self-reliance path to strengthen key capabilities, even as he drew attention towards the speed at which India's adversaries are building military capabilities.

“Atmanirbharta is what we are riding. But this atmanirbharta cannot be at the cost of nation's defence,” Singh said at a seminar. “The nation's defence comes first and foremost, and if IAF or Indian forces have to ride on atmanirbharta, it is only possible if everyone, from DRDO to DPSUs to the private industry, holds our hand and takes us on that path and doesn't let us deviate. Because when it comes to national defence, there will be compulsions to deviate from that path in case we do not get the things we need, or the kind of systems and weaponry required to survive in today's world.” India is pursuing an ambition agenda to achieve self-reliance in the defence sector with the support of the three services.

It has taken a raft of measures during the last five to six years to boost self-reliance in the defence manufacturing sector. Apart from a series of phased import bans, these steps include creating a separate budget for buying locally made military hardware, increasing foreign direct investment (FDI) from 49% to 74% and improving ease of doing business.

“The rate at which our adversaries are building their numbers while imbibing new technologies, the capability gap is continuously growing. I exhort DRDO, DPSUs and the private industry to focus on innovative technologies, out-of-the-box solutions and increase of capability as well as capacity,” he said.

<https://www.hindustantimes.com/india-news/selfreliance-can-t-be-at-cost-of-nation-s-security-says-air-force-vice-chief-101721416670033.html>



**Press Information Bureau  
Government of India**

**Ministry of Defence**

*Sat, 20 July 2024*

### **Royal Saudi naval forces (RSNF) trainees join first training squadron (1st) for afloat attachment**

76 trainees of King Fahad Naval Academy of the Royal Saudi Naval Forces (RSNF) joined the First Training Squadron, 1TS of the Indian Navy at Southern Naval Command, Kochi on 24 Jun 24. This is the second batch of trainees who would be undergoing training with 1TS, the first batch having undergone similar training in May – Jun 2023.

The trainees were extended a warm welcome by Senior Officer 1TS, Capt Anshul Kishore during the inaugural address outlining the four weeks long training programme. The training curriculum ranges from basic seamanship activities to simulator based training during the harbour phase, whereas the sea phase focuses on practical exposure to nuances of life at sea.

The trainees would also be familiarised with sail training onboard sail training ship of 1TS. The afloat attachment of RSNF trainees is being conducted alongside Indian Naval trainees of 107 Integrated Officers Training Course (IOTC) fostering camaraderie and mutual understanding between the trainees of both maritime nations. It may be recalled that Adm Fahad Abdullah S Al-Ghofaily, Chief of Staff, RSNF had visited Southern Naval Command in Jan 24 during his official visit to India. The bilateral training cooperation between the two Navies is a testimony to longstanding friendship and shared commitment between India and Saudi Arabia.

<https://pib.gov.in/PressReleaseIframePage.aspx?PRID=2028748>

## **Airbus shortlists 8 sites for making H125 choppers in India**

Airbus Helicopters has shortlisted eight locations in India for setting up a production line for the H125 chopper, the fourth such facility in the world, in partnership with Tata Advanced Systems Limited (TASL), and the company has projected a demand for 500 helicopters in the country and south Asia during the next 20 years, senior Airbus officials said on Sunday. The single-engine H125's final assembly line (FAL) in India will be the first for a civil helicopter in the private sector.

“The final assessment of the locations is on. We will soon make the announcement on where the H125 will be built in India. The factors that will guide the decision include how attractive the location is to our employees, its suitability for industrial activity, and the logistics ecosystem,” said Olivier Michalon, executive vice president, global business, Airbus Helicopters.

The groundbreaking ceremony for the new facility is expected around the year-end, and the Airbus-Tata combine will initially produce ten helicopters a year, with production being ramped up as orders grow, he said. The H125 will be also exported to South Asian countries.

Michalon's comments came during an interaction with Indian journalists at the Airbus' Marignane helicopter facility, which is outside Marseille and was opened in 1939, where he spoke about the partnership with TASL, the potential India's helicopter market holds, and how the H125 fits into the picture.

The partnership between the two companies to assemble the helicopters in the country, aimed to push the Make in India model, was announced in January 2024 during talks between Prime Minister Narendra Modi and French President Emmanuel Macron to deepen strategic ties. India and France then agreed to a new roadmap for defence-industrial cooperation to identify opportunities for partnership in co-designing, co-development and co-production of military hardware. Airbus Helicopters believes that the C-295 experience will help.

“We share information within the group and learn from best practices. We also look at what could have been done better. So, there will be a learning curve for us,” Michalon said.

The deliveries of the C-295 are in full swing and the last of the 16 flyaway aircraft will be delivered to IAF by August 2025. The first “made in India” C-295 will roll out of the Vadodara facility in September 2026 and the remaining 39 by August 2031.

The first H125 will also roll out of an Indian facility in 2026. These helicopters are currently produced only in France, the US and Brazil. At the Indian FAL, TASL will handle major component assemblies, avionics and mission systems, flight controls, hydraulic circuits, fuel systems and the engine. All this will be done with support and guidance from Airbus Helicopters, including the upcoming training of Indian personnel in France.

The H125's engine and gearbox will come from France, the main airframe from Germany, and the tail boom from Spain, the officials said.

The FAL in India will be the same at the H125 production line in Marignane. “The goal is to make sure we replicate the same quality and safety standards, invest in giving the best training to people and have high-quality processes and operational efficiency,” said Jerome Ronssin, who heads Airbus' light helicopters programme.



The 2,8-tonne H125 can carry up to six passengers, fly at a maximum altitude of 23,000 feet, has a range of 630 km and a top speed of 250 kmph. The roles it is suited for include commercial transport, law enforcement, emergency medical services, disaster management, offshore industry and fire fighting duties. The military helicopter segment in India has matured with Hindustan Aeronautics Limited (HAL) producing several platforms such as the advanced light helicopter (being produced for civil use too), the light combat helicopter and the light utility helicopter.

HAL has its plate full for the next 15 to 20 years as far as helicopters are concerned, and it's critical for the private sector to step in, said aviation affairs expert Air Marshal Anil Chopra (retd). "The H125s from India will be sold to other countries too. It will enhance India's visibility as an exporter."

<https://www.hindustantimes.com/india-news/airbus-shortlists-8-sites-for-making-h125-choppers-in-india-101721555597969.html>



Sat, 22 July 2024

## Life Safety Jacket : जवानों की रक्षा के लिए 'देसी सुरक्षा कवच' तैयार, अब भारत से खरीदेंगे यूरोपीय देश

देश के सुरक्षा बल में शामिल जवान अपनी धरती पर दुश्मनों के कदम पड़ते ही उनके सामने चट्टान बनकर खड़े हो जाते हैं। उनकी सुरक्षा को अब 'देसी सुरक्षा कवच' मजबूत करेगा। इसके लिए 'बैलेस्टिक प्रोटेक्शन ड्रेस' के नाम से जैकेट डिफेंस इंडस्ट्रियल कारिडोर अलीगढ़ नोड में तैयार की जा रही है। मेक इन इंडिया के तहत बन रही इस जैकेट की खूबी ये है कि विदेशी जैकेट के मुकाबले अधिक सुरक्षित है। लगभग आधे वजन की है। मूल्य भी 20 से 25 प्रतिशत कम है। कमर के ऊपर दोनों साइड को भी पूरी तरह बचाने में सक्षम है, जबकि विदेशी जैकेट में ये खूबियां नहीं हैं। अभी जैकेट इस्त्राइल, अमेरिका, रूस, फ्रांस आदि देशों से खरीदी जा रही थी। मगर, अब यूरोपीय देश इसको खरीदने के लिए भारत से संपर्क में हैं।

2023 में अलीगढ़ में शुरू हुआ काम भारत सरकार से करार के बाद वर्ष 2023 में ये अलीगढ़ की एलन एंड एलवन डिफेंस एंड एरियोस्पेस कंपनी में इस बुलेट रेसिस्टेंट जैकेट पर काम शुरू हुआ। पिछले महीने केंद्र सरकार की ओर से अलीगढ़ आई सिक्योरिटी फोर्स की टीम ने इसका डेमो भी लिया है। इसमें ये उम्मीदों पर

शत-प्रतिशत खरी उतरी है। इसके बाद सैकड़ों पीस पर काम किया जा रहा है। विदेश से आने वाली बुलेट रेसिस्टेंट जैकेट कैबलियर सामग्री से तैयार होती है।

बनाई गई हैं 7 परतें

अलीगढ़ में बन रही जैकेट एडवांस मैटीरियल से तैयार हो रही है। शुरुआती चरण में तैयार जैकेटों में कारतूसों को रोकने के लिए सात परतें बनाई गई हैं। भविष्य में ये मल्टीपल लेयर (कई परतों) वाली भी बनेंगी। छाती, गला, गर्दन, पेट सामने से सुरक्षित करने साथ दोनों साइड से भी सुरक्षा का प्रविधान इसमें किया गया है।

यूरोपीय देश देख रहे भारत की ओर

विदेश से आने वाली जैकेट लगभग एक से 1.25 लाख रुपये की पड़ती है। मगर देश में तैयार होने वाली ये जैकेट इससे 20 से 25 प्रतिशत सस्ती व बेहतर है। इसके चलते यूरोपीय देश जैसे इटली, बेल्जियम, रूस, फ्रांस, जर्मनी, पोलैंड, रोमानिया, इटली, स्वीडन, फिनलैंड आदि भारत से ये जैकेट लेने के लिए आतुर हैं। इससे देश की अर्थव्यवस्था समृद्ध होगी।

भारत सरकार से करार के बाद बैलेस्टिक प्रोटेक्शन ड्रेस बनाई गई हैं। 9-एमएम व एके-47 के कारतूस रोकने की उच्च क्षमता, वजन व मूल्य में कमी इसको विशेष बनाती हैं। डेमो भी हो चुका है। आयात के लिए यूरोपीय देश भारत की ओर निगाह किए हैं।

<https://www.jagran.com/uttar-pradesh/aligarh-city-indian-army-desi-suraksha-kavach-ready-to-protect-soldiers-european-countries-will-buy-from-india-23762893.html>

## Dented corn ethanol, a pathway for India's decarbonisation

Highlighting the importance of bio ethanol derived from dented corn, J P Gupta, chair, Environment Committee, PHD Chamber of Commerce and Industry on Friday said it represents a technologically mature and economically competitive pathway for India's de-carbonization and sustainable development.

Dr Gupta said that the dented corn ethanol embodies "Food, Feed, and Fuel," and added that the beauty of the same is that no other source provides the dual use.

He further said that it will not only provide a good source of energy, but will also help change the financial condition of the farmer, as more demand will increase more income.

Gupta in his address at the 4th International Climate Summit organised in New Delhi by the PHD chambers of commerce and industry, further pointing out the use of corn ethanol mentioned that it has the potential of replacing 100 per cent use of gasoline in the flexi engines, can be used as aviation turbine fuel, and also be a replacement for LPG etc.

Dr Gupta further said that the dented corn is particularly advantageous for ethanol production due to its high starch content of 70-75 per cent, compared to the 20-30 per cent in normal corn, and because of this, as a result it produces greater ethanol yield, which is 2.8 gallons per bushel versus 1 gallon per bushel from normal corn, he claimed.

One more advantage of dented corn is that the same is the most produced crop globally, he added.

Dr Gupta also said that it makes for a good raw in the production of special chemicals and thermoplastics, also providing an answer to climate change, with its contribution in up to 80 per cent reduction in greenhouse gas emissions, as compared to the fossil fuels, Dr Gupta claimed.

He said that the PHD chambers has been in the forefront for charting the pathway for the decarbonization of India through green hydrogen, and has hosted three international climate summits and authoring three knowledge books on green hydrogen.

<https://www.thestatesman.com/cities/dented-corn-ethanol-a-pathway-for-indias-decarbonization-dr-j-p-gupta-1503322346.html>



## ISRO to test air-breathing hypersonic tech on July 22

On Monday (Jul 22), the Indian Space Research Organisation (ISRO) will be test-flying a unique piece of technology known as an air-breathing propulsion system, WION has learnt. The test



launch of this system is expected around 7:30 am IST, from India's spaceport Satish Dhawan Space Centre, Sriharikota. This flight test will be performed using a modified version of ISRO's 'Rohini-560' experimental rocket, dubbed as Advanced Technology Vehicle (ATV). The test articles would be mounted on the ATV rocket

This test will be a follow-up to ISRO's maiden experimental flight of air-breathing propulsion technology that was carried out on August 28, 2016.

My Exclusive: #isro will be testing an Air-breathing propulsion system mounted on RH-560 rocket, tomorrow 22nd July. This is a follow-up to a 2016 test, where ISRO's Scramjet engine achieved Hypersonic speed of Mach 6. Scramjet engine uses on-board Hydrogen, Oxygen from air. [pic.twitter.com/ICJZhyAKf2](https://twitter.com/ICJZhyAKf2)

— Sidharth.M.P (@sdrthmp) July 21, 2024.

What is air-breathing propulsion?

Typically, a rocket consists of two tanks - a fuel tank and an oxidiser tank, both of which (known as propellants) comprise a significant mass of the rocket. The oxidiser is used to provide the necessary oxygen to enable the burning of the fuel, which together propel the rocket upwards.

In case of air-breathing propulsion systems, the rocket will carry its fuel, but will not carry an on-board oxidiser. Instead, this system will utilise atmospheric oxygen as an oxidiser to burn the fuel. This makes rockets significantly lighter and more efficient. However, such air-breathing technologies can be used only within the denser layers of the Earth's atmosphere, where there is an adequate supply of oxygen. Such technologies might be feasible in the denser layers of Earth's atmosphere (up to 70 kilometres altitude), and thereafter the rocket must switch to another stage that has both fuel and an on-board oxidiser,

For context - India's largest rocket LVM3 weighs around 640 tonnes at liftoff. Of the 640 tonnes mass, nearly 555 tonnes or 86 per cent is the propellant or the fuel and oxidiser combination. Of the 555 tonnes of propellant, nearly 70 per cent or 385 tons is oxidiser alone.

While the rocket weighs 640 tonnes, the cargo that it carries to space would be just about four to eight tonnes. Effectively, the cargo delivered to space by the LVM3 rocket is anywhere between 0.6-1.25 per cent of the rocket's own liftoff mass. Almost all conventional rockets deliver only 2-4 per cent of their liftoff mass to orbit. However, when air-breathing technologies are incorporated, the avoidance of oxidiser in the atmospheric phase of flight can lead to significant improvement in rocket efficiency, bringing down rocket mass, and reducing rocket costs.

What are the types of air-breathing propulsion?

Ramjet, Scramjet and Dual Mode Ramjet (DMRJ) are the three concepts of air-breathing engines which are being developed by various space agencies. Ramjet engines have no moving parts and rely on the vehicle's high speed to compress incoming air. The compressed air is mixed with fuel and ignited, producing thrust that propels it. Ramjet cannot fly on its own from the ground. A rocket will have to carry the ramjet engine to a supersonic speed and then the ramjet engine will take over and deliver speeds between Mach 3 and Mach 5. Mach 1 refers to the Speed of sound - 343m/sec or 1,234 kmph. The increase in Mach number denotes a corresponding increase in the speed.

For example, the Indo-Russian BrahMos missile uses a Ramjet engine. At launch, the BrahMos' first-stage booster engine would propel the missile upwards and then to supersonic speeds, after which the first-stage booster is separated. Then the Scramjet engine takes over and helps the missile fly at speeds close to Mach 3.

## Scramjet

A Scramjet engine is an advanced version of the ramjet. Scramjet stands for Supersonic Combustion Ramjet. Scramjets operate at hypersonic speeds (Mach 5 and above). Scramjets do not have any rotating parts such as compressors or turbines. Instead, they rely on the high speed of the vehicle to compress incoming air, which is then mixed with fuel and burned to produce thrust.

While the vehicle is travelling at hypersonic speeds, air enters the scramjet engine through an inlet where it is compressed due to the vehicle's high velocity. This compression raises the air pressure and temperature. The compressed air is mixed with fuel (usually hydrogen) and ignited. The airflow through the engine remains supersonic throughout the combustion process, making it suitable for very high-speed flight. Scramjets are designed to operate efficiently at speeds typically between Mach 5 and Mach 10.

## Dual Mode Ramjet

A Dual Mode ramjet (DMRJ) is a type of engine where a ramjet transforms into a scramjet over Mach 4-8 range, which means it can efficiently operate both in subsonic and supersonic combustor modes. Simply put, it combines the characteristics of a Ramjet and Scramjet.

## ISRO's Scramjet engine

The Scramjet engine designed and developed by ISRO uses Hydrogen as fuel and oxygen from the atmospheric air as the oxidiser. In August 2016, the maiden short-duration experimental test of ISRO's Scramjet engine was accomplished with a hypersonic flight at Mach 6 and the Scramjet engines functioned for 5 seconds. ISRO's Advanced Technology Vehicle (ATV), a modified RH-560, served as the solid rocket booster that carried the scramjet test articles to supersonic speeds. The then ATV carrying Scramjet engines weighed 3,277 kg at lift-off.

In the maiden test, ISRO successfully demonstrated critical technologies such as the ignition of air-breathing engines at supersonic speed, holding the flame at supersonic speed, air intake mechanism and requisite fuel injection systems.

Gradually, ISRO plans to develop an autonomous vehicle powered by Scramjet engine capable of accelerating for a period of 250 seconds. ISRO also intends to develop HAVA - Hyper Sonic Air Breathing Vehicle with Air Integration Systems. Such technologies are of strategic use and prove crucial in the development of advanced, high-speed aerospace vehicles. India is the fourth country to demonstrate the flight testing of a Scramjet engine.

<https://www.wionews.com/india-news/exclusive-isro-to-test-air-breathing-hypersonic-tech-on-monday-742906>

