

DRDO to showcase technologies and innovations at Aero India: Defence Ministry

*The 12th edition of Aero India 2019, an international exhibition
will be held from 20-24 Feb at Yelahanka in Bengaluru*

The Defence Research and Development Organisation (DRDO) will be participating in Aero India 2019 next week in a big way and will be showcasing around 250 systems, technologies, working models and innovations, the Defence Ministry said Saturday. More than 24 laboratories under different technology clusters of DRDO connected to the aerospace and aeronautics are displaying their products and showcasing their achievements.

The participating clusters are - Aeronautical Systems, Missiles, Armaments & Combat Engineering, Electronics & Communication Systems, Micro Electronics Devices and Computational Systems, Naval Systems and Materials and Life sciences.

The 12th edition of Aero India 2019, an international aerospace and defence exhibition will be held from 20-24 February at Yelahanka in Bengaluru, the Defence Ministry said Saturday.

In the Indoor Pavilion scaled models of LCA-Tejas variants, Airforce Mark-1, Medium Weight Fighter, Naval Variants and also trainer variants will also be displayed.

<https://economictimes.indiatimes.com/drdo-to-showcase-technologies-and-innovations-at-aero-india-defence-ministry/articleshow/68029270.cms>



India's air-to-air Astra super missile system nears commissioning as DRDO tests SFDR propulsion system

The Defence Research and Development Organisation (DRDO) last week tested a complete solid fuel ducted ramjet (SFDR) propulsion system from a ground-based launcher, blasting a missile system to a high altitude and achieving speeds of Mach 3.

According to a Livemint report, the SFDR technology takes the performance aspects of the beyond visual range air-to-air Astra missile - that runs on a smokeless solid fuel rocket motor - such as range, sustained speed or kinetic energy during the phase when missile close in on its target, to the next level.

The SFDR technology is a \$70 million joint effort by India and Russia. DRDO's latest test of the technology, conducted on 8 February, was a step up from the first trial of the SFDR that was conducted in May 2018.

The missile was guided to high altitude to simulate aircraft release conditions and subsequently the nozzle-less booster was ignited, reports Business Line.

“The SFDR technology will be a legacy leap in our air combat weaponry,” an IAF officer embedded with the SFDR development team was quoted in the Livefistreport as saying.

The Astra missile system is reportedly expected to be commissioned this year. Meanwhile, the SFDR technology will be continuously developed by DRDO and the program is expected to achieve demonstrable finality by summer 2020.

“The Astra itself is turning out to be a very capable weapon system, even beyond some of our expectations. With SFDR, as they say, the sky is the limit. We are waiting to see what else this technology can demonstrate, especially from air launches and sustained velocity tests, which we will be gearing up for later this year,” the IAF officer added.

<https://swarajyamag.com/insta/indias-air-to-air-astra-supermissile-system-nears-commissioning-as-drdo-tests-sfdr-propulsion-system>



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35 years after inception, Tejas Mark I design frozen

The FOC Tejas will have air-to-air refueling capability, beyond visual range Israeli Derby missiles, high angle attack expansion with a capability to match the best fighters in its light weight class in the 4 to 4.5 generation category

By Shishir Gupta and Sudhi Ranjan Sen

Thirty-five years after the inception of India's light combat aircraft programme, the Aeronautical Development Agency (ADA) has finally frozen the design of the Tejas Mark I defence fighter with aircraft drawings submitted on December 31 and the certificate of combat readiness obtained from the Centre for Military Airworthiness and Certification (CEMILAC) under the Defence Research Development Organisation (DRDO).

In an interview, Girish Deodhare, director, combat aircraft and ADA, said that the first Tejas in the final operational configuration (FOC) will be delivered to the Indian Air Force (IAF) in September with another 15 fighters to be delivered in the following 20 months. The deliveries will be much faster with Hindustan Aeronautics Ltd (HAL) deciding to outsource aircraft sub-assemblies to private companies such as Larsen & Toubro.

The FOC Tejas will have air-to-air refueling capability, beyond visual range Israeli Derby missiles, high angle attack expansion with a capability to match the best fighters in its light weight class in the 4 to 4.5 generation category.

From the initial order of 40 fighters from IAF, Deodhare said state-owned HAL, Bengaluru had delivered 12 fighters in combat-ready initial operational configuration (IOC) with the next four fighters to be delivered next month. The eight remaining aircraft will be in two-seater trainer configuration, which will follow the FOC fighters and also be fitted with air to air refuellers.

The IAF order under negotiation for 83 more platforms will be Tejas Mark IA, which will be fitted with state-of-the-art active electronically scanned array radar developed indigenously or ELTA, Israel, in a tie-up with HAL. ADA, Deodhare disclosed, is already testing an indigenously developed AESA radar with Tejas Mark I.

Deodhare conceded that there have been delays in the Tejas programme due to optimistic projections of time by its designers, developers and producers, and added that Tejas Mark II

will be a twin-engine advanced medium combat aircraft (AMCA) with a heavier GE-414 engine as compared to the GE 404 engine of the Mark I. The twin-engine fighter will also have a naval variant. The development of the Mark II has already received a green signal from the defence minister and is set to go before the Cabinet Committee on Security (CCS) for full financial approval of development costs.

Even though the FOC Tejas will come with some deviations from the air staff qualitative requirements, 1985, the fighter will not lose any of its fighting capability and will optimally perform its duties of defending air bases under attack and Indian borders. While the turnaround time of Tejas Mark I is high as the designers focused on the development of the aircraft primarily, with only the secondary focus on maintenance and repairs, HT learns that IAF has finally been handed over initial documentation (the manual) of the fighter with the upgraded and complete documentation ready in the next two to three months. The force needs this manual for training and operating purposes.

<https://www.hindustantimes.com/india-news/35-years-after-inception-tejas-mark-i-design-frozen/story-y55fWRPZMMYARTCZMgzqIJ.html>



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Gaganyaan's review panel to meet in March

Indian Space Research Organisation to share mission details to stakeholders

By Madhumathi DS

A national review committee on Gaganyaan is slated to meet for the first time here on March 5 and 6 and comprehensively scan the contours of the first Indian human mission to space.

The Indian Space Research Organisation (ISRO) wants to unveil the human mission's details to stakeholders from multiple agencies, and also keep the nation in the loop about the prestigious mission, K.Sivan, ISRO Chairman and Secretary, Department of Space, said. He added, "It should also give us the confidence that we are on the right track with such a humongous project."

The broad-based review committee may have around 100 experts and scientists related to all aspects of the ₹10,000-crore human mission, it is learnt.

The committee will also be briefed on March 6 on the lunar lander and rover mission, Chandrayaan-2, which may take place around April.

Back in November 2004, ISRO had first brainstormed a crewed mission at a similar gathering of nearly 100 experts in Bengaluru.

In full swing

Agreements and programmes planned with the Indian Air Force (IAF) and the Defence Research and Development Organisation (DRDO) will start taking shape from now on, Dr. Sivan told *The Hindu*. "Gaganyaan-related activities are in full swing," he said, under the newly formed Human Space Flight Centre (HSFC) and a dedicated project team.

Humans in space

Gaganyaan was announced on August 15, 2018 as a marquee mission for the 75th year of Independence. It is slated to take place at a 'near-Earth' distance of 400 km.

Before that, two unmanned trial flights with human-friendly capsules are to be flown in 2020, carrying a few micro-gravity experiments.

Dr. Sivan said ISRO recently submitted to the IAF a set of requirements on selecting and training prospective Indian space travellers. The IAF would come back with details of its facilities. “In order to have three flight-ready finalists as crew, we need to give astronaut training to at least ten [eligible] persons,” he said.

The astronauts will be mainly trained at the IAF’s Institute of Aerospace Medicine in Bengaluru.

The area of Environment Control and Life Support Systems (ELCSS) is said to be the most important for making the capsule habitable for astronauts. The life sciences labs of the DRDO work in this area.

<https://www.thehindu.com/news/national/gaganyaans-review-panel-to-meet-in-march/article26284287.ece>