

# Tejas Mark 1: Stepping stone to self-reliance

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The central theme of the ongoing Aero India 2023 air show in Bengaluru is “atmanirbharta” or self-reliance in building India’s requirement of military equipment. Emblemising atmanirbharta is the Tejas Mark 1 fighter, which has placed India on the map of countries that can design, develop and manufacture advanced fighter aircraft.

This is already yielding results. Hindustan Aeronautics Limited (HAL) CMD C B Ananthakrishnan revealed on Tuesday in Bengaluru that India is discussing the sale of 20 Tejas light combat aircraft (LCA) with Egypt and 15 Tejas fighters with Argentina.

But for the Defence Research and Development Organisation (DRDO), the real value of the Tejas Mark 1 is the role it will now play in the development of India’s next generation of fighter aircraft that will be more technologically advanced and lethal.

In the India Pavilion, dedicated to success stories in indigenisation, the Tejas Mark 1 fighter is lionised as the key stepping stone to the development of a range of fighters: Tejas Mark 2, the fifth-generation fighter eponymously called the Advanced Medium Combat Aircraft (AMCA) and the Twin Engine Deck Based Fighter (TEDBF) that is intended to fly missions from Indian Navy aircraft carriers.

In addition, the LCA (Navy) is eulogised as an important platform for technology development that will power naval aircraft such as the TEDBF.

*Business Standard* spoke to Girish Deodhare, who heads the Aeronautical Development Agency (ADA) — the DRDO laboratory that oversees fighter



IAF’s Tejas aircraft takes off for a sortie at Aero India 2023 PTI

## ON THE RADAR

- Two B-1B Lancer supersonic heavy bomber jets of the US Air Force joined the American exhibits at the Aero India, reflecting deeper strategic ties between the two countries
- GE Marine and HAL on Tuesday said they had signed an MoU to explore the

expansion of HAL’s manufacturing capabilities

- HAL had an order book position of ₹84,000 cr and another ₹50,000 cr worth of orders were in the pipeline, its CMD C B Ananthakrishnan said, adding that Argentina and Egypt had evinced interest in buying HAL-built light combat aircraft Tejas PTI

aircraft development.

## LCA (Navy)

“Trials of landing and taking off from a carrier’s deck are under way in INS Vikrant and we are successfully doing those with a prototype LCA (Navy),” said Deodhare.

The LCA Navy prototype is proving all the indigenous technologies coming out of our sister laboratories for future aircraft, said the ADA chief. These include the radar, the electronic warfare systems and weapons such as the Astra air-to-air missiles. Since all the avionics on the Astra are indigenous, this is easily done. Within months it can be made ready for testing and qualifying.

“Thanks to the LCA (Navy) prototype, we are understanding how to design carrier-based

naval aircraft and are progressing very well,” said Deodhare.

The LCA (Navy) was sanctioned in 2003 and it first flew in 2014 and the first arrested landing in 2019. Two months later, it graduated to a carrier deck — such was the Navy’s confidence in the aircraft.

## Tejas Mark 2

The LCA Mark 2 is going to be a 17.5-tonne fighter, with significantly more weapons load and fuel carriage than the 14-tonne Mark 1. The LCA Mark 2 will fly by 2024-25 and will be ready for production by 2027, said Deodhare. The drawings for the Mark 2 are ready and manufacturing will soon commence. The Indian Air Force (IAF) is looking at six squadrons of the fighter.

The LCA Mark 2 will be powered by the General Electric (GE) F414 engine, significantly

more powerful than the current F404 engine. The F414 was selected in a global tender in 2012, in which it edged out the Eurojet EJ200 engine. The Mark 2 is designed around the F414 engine.

## AMCA

“The design of the AMCA — a fifth-generation stealth fighter — is complete and it is at the stage of critical design review. We are at the preliminary design stage of the TEDBF and that should move along quickly now,” said Deodhare.

Aero India 23 has displayed an AMCA simulator with a state-of-the-art cockpit. The DRDO has also displayed advanced actuators that are now being made in India and available for indigenous use.

“We have also developed the internal weapons bay for the AMCA and a working model of that is on display,” said Deodhare. “The AMCA is being allotted a budget of ₹15,000-16,000 crore. The air force is looking at seven squadrons of AMCA’s.”

## TEDBF

Deodhare explained that the TEDBF is not a fourth-generation fighter, but a generation-five minus aircraft. Its basic design has been completed and ADA is at the preliminary design stage. The fighter’s all-up weight will be 25-26 tonnes and it will have twin F414 engines.

Inputs are being fed in from LCA (Navy) trials from Goa and from the INS Vikrant. The wing-folding mechanism has now been finalised. The fighter can carry weapons on its wing-tips despite the wing-folding mechanism. Its armament load will be 17.5 tonnes.

“We are trying to take inputs also from other programmes. We are doing everything indigenously, not even thinking of imported radar. Once we develop basic technologies it is easy to upscale it for larger platforms,” said the ADA chief.

