

Cabinet likely to take up Tejas Mark 2 case soon

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New Delhi, 29 August

This week, a case may be placed before the Union Cabinet to grant permission and financial sanction to go ahead with the design and development of the Tejas Mark 2 — a more capable version of the indigenous Tejas light combat aircraft (LCA).

A Cabinet nod is expected for the Aeronautical Development Agency (ADA) to go ahead with the design, development, testing, and certification of the Tejas Mark 2 fighter, according to sources in the Ministry of Defence.

The new Tejas Mark 2 fighter is expected to be rolled out in a two-year time frame, and its first flight will take another year, say ADA officials. Then flight testing and certification are expected to take another five years. That means the Tejas Mark 2 will only become operationally available around 2030.

It is estimated that the entire project, including the building of a small number of prototypes for flight testing, will require a budget of ₹10,000 crore.

The initial Tejas batches, which included 40 Tejas Mark 1 fighters and 83 Tejas Mark 1A (still under development), were developed as light fighters to replace the profusion of antiquated MiG-21 and MiG-27 light fighters in the Indian Air Force (IAF).

However, the Tejas Mark 2 variant, which is still on the drawing board, will be a larger aircraft, falling in the medium fighter category rather than light fighters.

Numerous additional capabilities the IAF and the Navy want incorporated into the Tejas Mark 2 will increase the weight of the 14.5-tonne



A Tejas Mk 1 fighter carrying out aerobatics display at Aero India show in Bengaluru in 2021

Tejas Mark 1 by 3 tonnes, taking it into the 17.5-tonne medium fighter class.

While the two Tejas Mark 1 squadrons and four Tejas Mark 1A squadrons can be regarded as replacements for the last of the lightweight MiGs, the IAF is now billing the Tejas Mark 2 fighters as replacements for the Mirage 2000 and Jaguar medium fighters, rather than for the lightweight MiGs that are retiring soon.

Much of the Tejas Mark 2's increased weight and size come from a more powerful and sophisticated engine demanded by the IAF and the Navy.

They believe that the 83 kilonewtons (kN) of peak power provided by the current engine — the General Electric (GE) F404-IN20 engine — is inadequate for the sudden acceleration, sharp climbing, and sustained turning needed in a modern fighter.

To equip the Tejas Mark 2 with the power needed in the modern battlefield, ADA is powering the Mark 2 with a GE F414-INS6 engine (here-

after F414) that delivers 98 kN of peak power.

Upgrading the Tejas' engine is equally essential for the LCA (Navy), which needs a surge of engine power for getting airborne in just 200 metres of runway that is available on an aircraft carrier's deck. The Navy has demanded ADA should develop a twin-engine fighter for carrier deck operations.

GE has already supplied the first F414 engines for the Tejas Mark 2. These are being accommodated, along with larger air intakes, in the extra fuselage space available in the expanded Mark 2 fighter.

Besides a new engine, the internals of the Tejas Mark 2 are being rearranged, to make them more accessible and maintenance-friendly. Rearrangement will improve space utilisation, accessibility, and make maintenance quicker, reducing the turnaround time between operational missions.

Finally, the Tejas Mark 2 will feature upgraded avionics that are faster, lighter, and smarter than the previous generation in the Mark 1.

These would improve combat performance and operational security. A key upgrade involves fitting indigenous active electronically scanned array radar to replace the current ELTA EL/M-2032 multi-mode radar.

The transformation of the Tejas Mark 2 from a light to a medium fighter has taken place incrementally over the preceding decade.

In 2009, the Tejas Mark 2 was categorised as a 're-engined' version of the Tejas Mark 1, with the F404-IN engine replaced by the F414.

During the three years it took to buy the F414 engine, the IAF kept demanding additional systems and improvements to the existing ones.

By 2014, when the Tejas Mark 2's preliminary design review was conducted, the aircraft's fuselage had been stretched by half a metre and it was 1.5 tonnes heavier.

On the positive side, the Tejas Mark 2 is able to carry 4.5 tonnes of payload (mainly weapons load and external fuel). This is a full tonne more than the Tejas Mark 1's ability to carry 3.5 tonnes.