

Indian defense aerospace segment and positioning of HAL

We hosted an expert session with Mr. Dibyendu Maiti, former CEO of Hindustan Aeronautics (HAL), to understand the Indian defense aerospace segment in light of the current geopolitical events and the positioning of HAL in the segment. Mr. Maiti has over 38 years of experience with HAL. He explained the role of drones, missiles and AI in recent geopolitical wars and the shift in the Indian defense ecosystem to indigenous platforms. He highlighted that while India has achieved higher indigenization in the army and naval platforms, the aerospace segment remains dependent on imports. The private sector's participation has also increased in such platforms and components. He also talked about the positioning of HAL in defense aerospace, as the current supply chain issues have delayed the delivery schedule of Tejas Mk1A project, which he expects will improve when engine supplies increase. With sufficient capacities available for helicopters, sufficient manpower, and the adoption of Industry 4.0 across facilities, HAL will gradually start witnessing improvements in execution.

Key highlights of the discussion

Indian defense ecosystem and external dependence

The broader warfare is shifting toward drones, missiles, and AI-led systems, prompting India to realign its focus and investments accordingly. With a strong policy push, higher domestic procurement, and rising private sector participation, indigenization levels are expected to improve significantly over time. While India is largely self-reliant in missiles, naval, and land systems, defense aerospace remains a key gap due to material dependencies. India's aerospace sector is still highly dependent on foreign suppliers (~70-75%), particularly for engines, avionics, radars, sensors, semiconductors, and EW systems from Europe, Israel, US and other western countries. Strategic imports like the S-400 and the proposed MRFA program have strengthened immediate operational capabilities while enabling technology absorption and learning. Indigenous efforts, led by DRDO and BEL, such as the Uttam radar and development of full EW suites, are gradually reducing this dependence.

Upcoming defense aerospace projects

India's defense and aerospace sector is entering a stable growth phase, driven by indigenization, with DRDO-developed platforms playing a central role in addressing squadron shortages. These projects include: 1) Tejas Mk1A – already under development by HAL; 2) Tejas Mk2, 3) the twin-engine-deck-based fighter (TEDBF) for the Indian Navy, and 4) AMCA, a fifth-generation stealth fighter. Tejas Mk2 builds on the LCA platform with the Uttam AESA radar, replacing Israeli systems, and F414 engines with ~80% technology transfer from GE. Further, programs such as LUH and LCH Prachand (already being developed by HAL), along with the Indian multi-role helicopter (IMRH), unmanned combat air vehicles (UCAV), and Project Kusha for air defense, are strengthening the indigenization push under IDDM principles, led by DRDO. This is gradually increasing the share of domestically developed defense systems in India, with growing participation from private sector players to reduce import dependence.



Mr. Dibyendu Maiti
Former CEO, HAL

Mr. Maiti has over three decades of experience in defense manufacturing in various areas like projects, planning, IMM, outsourcing, production, assembly line, lean, facility generation, setting up of new factory, methods, collaboration with foreign OEMs, negotiations, dealing with foreign suppliers, defense services and MoD. He has also worked in corporate planning for five years, preparing perspective plans for HAL. He has been working as an independent defense consultant since Apr'23.

Increasing private sector participation

The private sector's participation is increasing in India's defense ecosystem, mainly in supplying structures, components, subsystems, and electronics. DPSUs like HAL continue to act as system integrators, handling platform integration, testing, and overall execution. In the upcoming programs such as AMCA, L&T and Tata Advanced Systems have been shortlisted, indicating increasing private sector involvement at the platform level too. At the same time, companies such as Data Patterns in embedded electronics, Astra Microwave in RF and microwave components, Paras Defense and Space Technologies in optronics, and Samtel India in display systems are contributing at the component and subsystem levels.

Tejas Mk1A delivery delay is beyond HAL's control; HAL has sufficient capacities and capabilities

HAL has witnessed delays in delivering Tejas Mk1A fighter jets due to delays in receiving engines from GE and due to IAF's requirement for missing firing trials and integration of Israeli radars with indigenous EW suites. HAL has already tested 14 aircraft based on these requirements. The company has 14 aircraft ready, and has received six engines so far, of which four can be integrated and delivered, while the remaining two are being retained for rotation into testing purposes for incremental aircraft. HAL currently has adequate capacity and capabilities to execute its existing and future order book beyond Tejas Mk1A. Its facilities in Bangalore and Nashik are equipped to manufacture 24 Tejas Mk1A aircraft annually. For the HTT-40 order, capacities at the Nashik unit have been scaled up. Su-30 upgrade has also been enhanced to over 30 aircraft annually compared to the earlier plan of 22. HAL's new facility in Tumkur has an annual capacity of 60 helicopters, evenly split between 30 LUH and 30 LCH. This facility complements the Bangalore helicopter division, where ALH production is being phased down to prioritize LCH. To improve efficiency, the company 1) maintains a stable manpower base through public-private collaborations, 2) has streamlined and automated approval processes, and 3) is transitioning its facilities towards Industry 4.0 adoption. These initiatives are expected to support a sustained ramp-up in execution from existing facilities once engine-related issues are sorted.

HAL's balanced risk framework across execution and costs

While there are provisions for liquidated damages (LD) charges in long-cycle defense programs, penalties are not typically imposed on critical suppliers like GE due to the strategic nature of such relationships and the lack of viable alternatives, especially for engines. However, HAL has imposed penalties on GE for delays in engine deliveries to take into account risks of IAF imposing penalties on HAL. Similarly, if the IAF imposes penalties on HAL for delays in Tejas deliveries, the company will have the provisions to discuss it further. On the cost side, raw material price volatility is not a major concern for HAL. The ROH segment has price variation clauses based on historical trends, while the manufacturing business operates on fixed-price contracts with no direct pass-through. However, sufficient buffers are built in at the time of bidding to safeguard margins over the project lifecycle.

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Nainesh

Rajani

Email: nainesh.rajani@motilaloswal.com

Contact: (+65) 8328 0276

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Contact Person	Contact No.	Email ID
Ms. Hemangi Date	022 40548000 / 022 67490600	query@motilaloswal.com
Ms. Kumud Upadhyay	022 40548082	servicehead@motilaloswal.com
Mr. Ajay Menon	022 40548083	am@motilaloswal.com
Mr. Neeraj Agarwal	022 40548085	na@motilaloswal.com
Mr. Siddhartha Khemka	022 50362452	po.research@motilaloswal.com

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