

Some Top Concepts and Potential Inductions at Aero India 2025

The 15th edition of the Asia's biggest air show unveiled numerous cutting edge platforms. Here are some indigenous systems and concepts that will steer the Indian Armed Forces towards supremacy in any potential conflict.

Yashas

22 years after the first flight, India's indigenous jet trainer "HJT-36 Sitara" is reborn as "Yashas," going through two decades of rigorous improvements to meet the requirements. It has been developed for the Stage-II pilot training. It's equipped with a single AL-55I engine (with Full Authority Digital Engine Control or FADEC system) generating a dry thrust of 17.3 kN, allowing a maximum take-off weight (MTOW) of 5.4T and a payload capacity of 1T. The cockpit has been redesigned for improved pilot visibility and situational awareness. The glass cockpit system includes multifunctional displays (MFD), advanced navigation and training system, and a head-up display (HUD). The improved aerodynamics have addressed the stall and spin recovery issue.



Radars: VHF

A Very High Frequency Radar operates in the 30-300 MHz band. The longer wavelengths allow the system to track aerial platforms with low radar cross-section (RCS), denying elevation. Thus, VHF radars play a crucial role in the detection of stealth platforms. DRDO showcased the VHF surveillance radar (VHF-SR) at Aero India, based on a TATA 6x6 high mobility platform. The range has been reported to be around 400 km (for the low RCS platforms). Once an enemy platform is detected, this radar will feed information to the tracking radar. Interestingly, private entity ADTL has also showcased its own VHF radar concept, "Surya," which is currently under development.



For Fighter Jets

The active electronically scanned array (AESA) radar has become an instrumental part of modern fighter jets. Quite astonishingly, not just the public sector but also the private sectors of India have started witnessing success in development. DRDO's LRDE has already developed the "Uttam" series GaAs AESA (manufactured by AMP Ltd.) for the Tejas Mk.1 and Tejas Mk1A. Recently it unveiled even more advanced GaN AESA "Virupaksha" for the upgraded Su-30MKI. In the future, variants will be used for the upcoming LCA Mk.2, TEDBF and AMCA. Meanwhile, private company Data Patterns unveiled the "Hawk I" GaN AESA family offering not just for the Su-30MKI, but also for the Tejas and MiG-29 as well! According to their claim, the radar offered to the Su-30MKI has a range of 350 km for a target with a radar