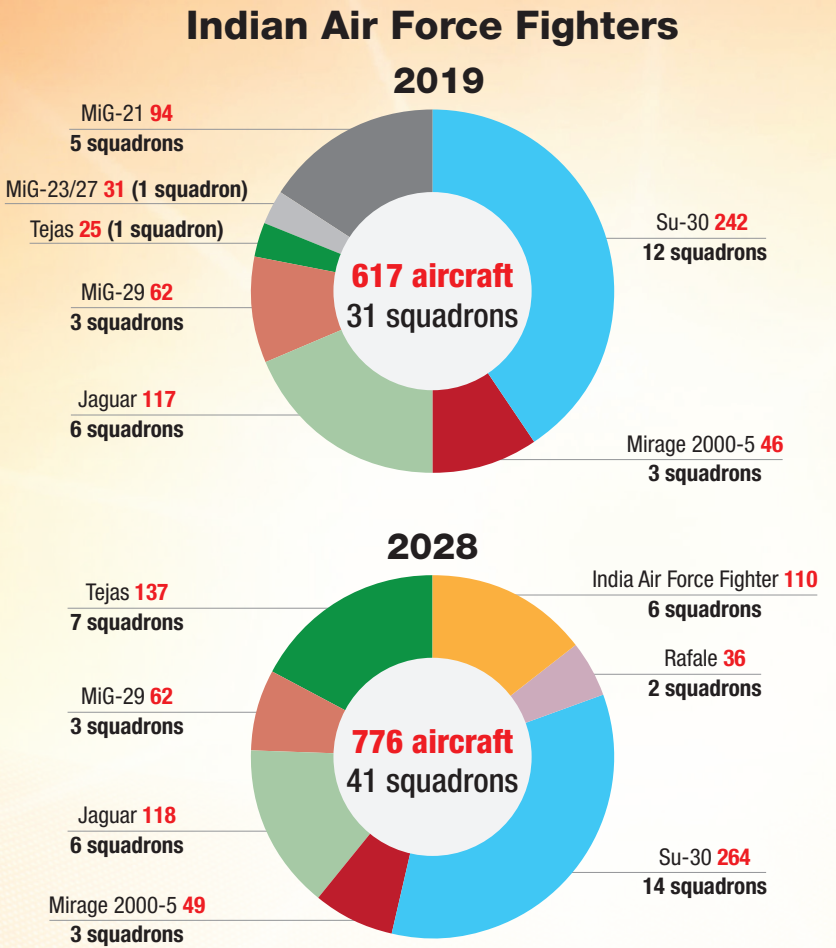


Who Will Make India's Next Combat Aircraft?

The opportunity to make 110 fighters for the Indian Air Force has drawn several bids

Jen DiMascio Washington, Thierry Dubois Lyon and Asia-Pacific Staff


The Indian Air Force has a requirement for 110 multirole fighters—the world's largest open competition for combat aircraft. Its indigenously manufactured Advanced Medium Combat Aircraft will be the successor to the Tejas Light Combat Aircraft and replace a fleet of legacy aircraft to be phased out by the mid-2030s. The air force's request for information indicates it wants a fleet that is three-fourths single-seat aircraft and one-fourth tandem. The lion's share of it, 85%, should be made in India under a strategic partnership. Though a final request for proposals and eventual contract award may be some time away, the multibillion-dollar prize is large enough to attract six contractors that are preparing to tie-up with Indian companies and abide by that country's stringent conditions in the hopes of landing the business as well as a chance at the Indian Navy's competition for 57 fighters. Here is a guide to the seven combat aircraft in contention.



For more information about Aviation Week's Fleet Data products, see: <http://pgs.aviationweek.com/FleetDataServices>
Source: Daniel Urchick and Michael Tint/Aviation Week Intelligence Network Fleet Data

Boeing F/A-18E Block III Super Hornet

Empty Weight	31,650 lb.
Thrust	44,000 lb.
Maximum Takeoff Weight	66,000 lb.
Speed	Mach 1.6
Engine	Two GE F414s




In-Country Partners: *Dynatomic Technologies, Mahindra Aerospace & Defense, Hindustan Aeronautics Ltd.*

- Advantages:**
- GE F414 engine in the same family as the Tejas Light Combat Aircraft powerplant.
 - Conformal fuel tanks, adding 3,500 lb. of additional fuel to extend range by up to 120 nm.
 - Reduced radar signature.
 - Advanced cockpit system with touch-screen display.
 - Increased computing power and expanded capacity to transfer data.
 - Block II Infrared search and track.
 - Designed for operations on aircraft carrier, including ability to fold wings.
 - Boeing's seven-decade relationship with India; sourcing from India is now close to \$1 billion a year.
 - Runway access to test aircraft.
 - Boeing's Factory of the Future, being built on 42 acres adjacent to Kempegowda International Airport near Bengaluru.
 - Runway access to test aircraft.
 - More than 160 suppliers to Boeing in-country. Its India Engineering & Technology Center employs 1,679 engineers.

Dassault Rafale

Empty Weight	22,000 lb.
Thrust	15,000 lb. per engine
Maximum Takeoff Weight	54,000 lb.
Speed	Mach 1.8
Engine	Two Snecma M88 engines



In-Country Partners: *Reliance Group, Mahindra, Maini, TAL, Defsys*

- Advantages:**
- Rafale to be operational in-country, with Indian specifications, next fall.
 - Carrier version available for the Indian Navy's potential requirement of 57 fighters.
 - Thales RBE2 fifth-generation active, electronically scanned array radar.
 - Compatibility with Thales' new Talios intelligence-gathering, surveillance-and-laser targeting pod, as well as Lockheed Martin Sniper.
 - Helmet-mounted display.
 - Spectra electronic warfare with improved jamming capacity and collaborative mode for threat location.
 - Intrapatrol voice and data link.
 - Preventive maintenance capacity on M88 engine.
 - Dassault's French suppliers setting up Indian supply chain.

Eurofighter Typhoon

Empty Weight	24,500 lb.
Thrust	20,333 lb.
Maximum Takeoff Weight	51,700 lb.
Speed	Mach 2
Engine	Two Eurojet EJ200 turbofans




In-Country Partners: *Hindustan Aeronautics Ltd. HAL*

- Advantages:**
- Simultaneously deployable air-to-air and air-to-surface capabilities.
 - Two Eurojet EJ200 engines—each capable of providing up to 60 kN (13,500 lb.) of dry thrust and more than 90 kN with afterburners.
 - With the Spear 3, each Typhoon can carry up to 12 mini cruise missiles, plus a full air-to-air weapons suite.
 - State-of-the-art data-imaging software.
 - Eurofighter partners Airbus' and BAE Systems' longstanding ties to India. HAL and BAE Systems have collaborated on aircraft for seven decades.
 - Industrialization, transfer of technology and licensed production of the Typhoon included in proposal.
 - Offer to build the C295W military transport aircraft alongside Tata and a partnership with Mahindra Defense to locally manufacture military helicopters.

Lockheed Martin F-16 Block 70

Empty Weight	20,300 lb.
Thrust	29,000 lb.
Maximum Takeoff Weight	48,000 lb.
Speed	Mach 2+
Engine	GE F110



In-Country Partner: *Tata Advanced Systems Ltd.*

- Advantages:**
- Northrop Grumman APG83 active, electronically scanned array radar, fifth-generation multimode radar capability.
 - AN/APX-126 Advanced Identification Friend or Foe system.
 - Joint Helmet-Mounted cueing system II to work with air-to-air and air-to-ground weapons.
 - Automatic ground collision-avoidance system.
 - Upgraded electronic-warfare system.
 - Compatibility with fifth-generation F-35 and F-22 fighters.
 - More than 3,300 carriage and release configurations, allowing more than 180 types of weapons.
 - Central pedestal display enables color moving maps and digital display of flight-instrument data.
 - Improved computing technology for data processing.
 - Embedded GPS/INS.
 - Compatibility with global F-16 fleet of 4,588 aircraft allows India access to F-16's \$150 billion sustainment market.
 - F-16 wings being built at Lockheed's joint-venture facility with Tata in Hyderabad.
 - Existing in-country metal-to-metal bonding capability.
 - Indian Innovation Growth Program has backed 400 innovators and startups.

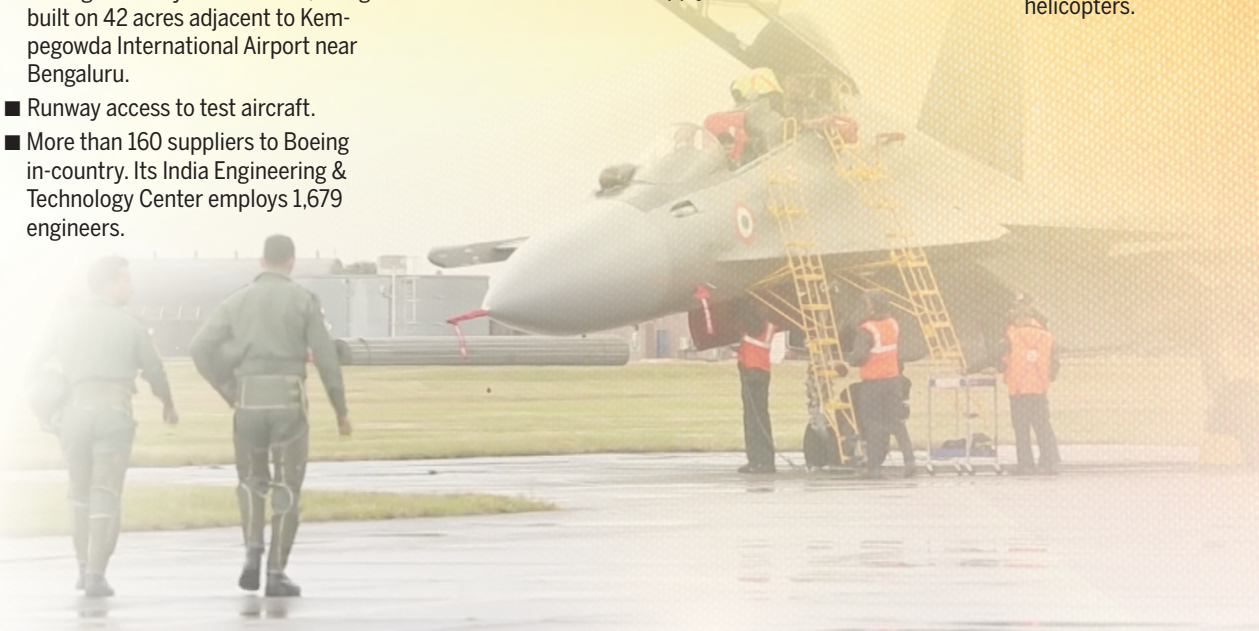


PHOTO CREDITS: TOP LEFT TO RIGHT: BOEING, DASSAULT, JAMIE HUNTER/EUROFIGHTER AND LOCKHEED MARTIN. BOTTOM: UK ROYAL AIR FORCE.

MiG 35

Empty Weight..... 24,251 lb.
Thrust 19,851 lb.
Maximum Takeoff Weight 65,477 lb.
Speed Mach 2.2
Engine..... Two Klimov RD-33 turbofans



In Country Partner: HAL

Advantages:

- Cost 20% cheaper than the competitors'.
- Cost per flight hour 2.5 times lower than MiG-29.
- Increased payloads on nine external hardpoints.
- Increased fuel capacity and ability to refuel other aircraft.
- Corrosion protection technology to operate in tropical climates and at sea.
- Three-channel digitally integrated fly-by-wire control systems with quadruple redundancy.
- Reduced radar signature.
- Thrust-vector capability integrated into the aircraft's RD-33 engine.
- HAL pledges to help UAC leverage existing production facilities in Nasik.
- Air force flies the MiG-35's precursor, the MiG-29, which is being upgraded the MiG-28 (UPG) level in Nasik.
- Logical work extension to make MiG-29 into MiG-35 through several stages. First, modular assembly using mod kit supplied by the Russian company. In the future, jointly with India, the full production cycle would be localized.

Saab Gripen E

Empty Weight..... 17,637 lb.
Thrust 22,031 lb.
Maximum Takeoff Weight 36,376 lb.
Speed Mach 2
Engine..... GE F414G



In Country Partner: Adani Group

Advantages:

- 10-min. operational turnaround time.
- Can seamlessly shift between air-to-air, air-to-ground and reconnaissance roles as well as act in multiple roles simultaneously.
- Active, electronically scanned array radar.
- Advanced electronic-warfare system.
- Advanced data communications, dual data links, satellite communications and video links to ensure pilot situational awareness.
- Data link within a tactical air unit, between airborne early warning and control-and-command and control centers on land or at sea.
- Smart, flexible avionic architecture allows for easy integration of weapons and allows old algorithms to be swapped.
- General Electric F414G engine.
- Saab's tech transfer offer envisions the overall growth of India's defense industry, replicating its strategic partnership in Brazil. Saab says it will transform a proposed India facility into a regional hub for Gripen.
- Set up a full manufacturing facility and aerospace ecosystem in India; creation of a local supplier base of ancillary systems; employment of a well-trained Indian workforce.

Su-35 Flanker-E

Empty Weight..... 40,565 lb.
Thrust 31,967 lb.
Maximum Takeoff Weight 76,059 lb.
Speed Mach 2.25
Engine..... Two Saturn AL-41F 117S turbofans



In Country Partner: HAL

Advantages:

- The Indian Air Force operates the Su-30MKI, and the Su-35 is a modernized version.
- Ability to operate independently, in a group of aircraft or as part of a battle group controlled from an aerial, ground- or ship-based command center.
- Single integrated information-management system.
- Covert attacks on radio-emitting aerial targets at mid- and long-range.
- Attacks ground and sea-surface targets with guided high-precision missiles without entering air-defense zones.
- Simultaneous air-to-air and air-to-surface operations.
- Can maneuver at +9g with high angle of attack.
- Central control column fitted with a Zvezda K-36D-3.5E zero-zero ejection seat.
- Twelve hardpoints for carrying external weapons and stores. Aircraft can be armed with a range of satellite-, TV- and laser-guided bombs.
- Two Saturn UF AL-31F 117S turbofan engines with thrust-vectoring nozzle control, each supplying 86.3-kN thrust or 142.2 kN with afterburn.

PHOTO CREDITS; LEFT TO RIGHT: UAC, SAAB AND UAC