

US Lockheed Martin's F-35 vs Russia's Su-57, Key Features

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As India aims to modernize its air combat capabilities, the choice between two fifth-generation fighter jets, the US Lockheed Martin's F-35 vs Russia's Su-57 has become a strategic decision with global implications. With both aircraft making headlines at Aero India 2025, India's next move could reshape its military weapon inventory for decades.

Why India Needs a Fifth-Gen Fighter

India's weapon inventory currently includes around 600 fighter jets, but none belong to the fifth-generation category. With increasing regional threats from China's rapidly growing stealth fleet and Pakistan's reported interest in acquiring similar technologies, India faces pressure to have a fifth-generation fighter. While domestic efforts like the Advanced Medium Combat Aircraft (AMCA) are underway, operational readiness is not expected before 2036. This opens the door for immediate imports, where the F-35 and Su-57 are top options.

F-35 Lightning II

The US Lockheed Martin's F-35, is widely regarded as the world's most advanced multirole fighter. It is available in three variants:

- F-35A for the Air Force
- F-35B with short take-off and vertical landing (STOVL) capabilities for the Marine Corps
- F-35C designed for aircraft carriers in the Navy

Key Features:

- Top Speed: Mach 1.6
- Combat Range: ~1,500 km
- Payload: 8,160 kg
- Fuel Capacity: 18,498 lbs
- Operational Altitude: Over 50,000 feet
- Sensors: Electro-Optical Targeting System (EOTS), Distributed Aperture System (DAS)
- Helmet-Mounted Display System (HMDS): Provides real-time targeting data and situational awareness

With more than 1,000 operational units worldwide and development support from nine partner nations, the F-35 is a battle-tested and interoperable platform in NATO operations.

Sukhoi Su-57

The Su-57, developed by Russia's Sukhoi Design Bureau, is a twin-engine multirole stealth fighter designed for both air superiority and ground strike roles. Russia has pitched its export version, Su-57E, as a cost-effective alternative for partners like India.

Key Features:

- Top Speed: Mach 2
- Combat Range: ~1,900 km
- Payload: 7,400 kg
- Max Operating Altitude: ~54,100 feet
- Engine: Saturn AL-41F1
- Stealth Enhancements: Serrated exhaust nozzle and internal weapon bays
- AI Integration: Onboard "electronic second pilot" system
- Radar Spread: Distributed radar array across the airframe

Although only around 40 Su-57s have been produced as of 2025, Russia claims the aircraft matches or exceeds the F-35 in certain performance metrics, especially agility and range.

US Lockheed Martin's F-35 vs Russia's Su-57

The Lockheed Martin F-35 and the Sukhoi Su-57 represent two of the most advanced fifth-generation fighter aircraft developed by the United States and Russia, respectively. Designed for air superiority, stealth, and multi-role

capabilities, both jets showcase cutting-edge technologies in modern aerial warfare. This comparison offers a detailed analysis of their design philosophies, capabilities, and strategic roles in shaping the future of air combat.

US Lockheed Martin's F-35 vs Russia's Su-57		
Feature	F-35B (STOVL)	Sukhoi Su-57
Origin & Manufacturer	US – Lockheed Martin (with Pratt & Whitney engine)	Russia – Sukhoi (United Aircraft Corporation)
Stealth Generation	5th-generation, with advanced RCS reduction (~0.005–0.3 m²)	5th-generation, RCS ~0.1–0.5 m²
Engine Configuration	Single-engine (Pratt & Whitney F135)	Twin-engine (AL-41F1) with 3D thrust vectoring
Max Speed	~Mach 1.6 (supersonic dash, no supercruise)	Up to Mach 2; can supercruise at Mach 1.3
Combat Range	Ferry range ~1,670 km (no external tanks); combat radius shorter	Combat range ~1,900 km; ferry ~3,500 km
Maneuverability	Fly-by-wire, high-alpha capability; no thrust-vectoring	Super-maneuverable with 3D TVC, high-alpha & Cobra maneuvers
Weapon Bays / Payload	Internal bays + up to 6 external hardpoints	Two internal bays + side bays; also 6 external hardpoints
Avionics & Sensors	Advanced sensor fusion, AESA radar, EW, targeting pods	AESA X-band radar + L-band sensors,IRST, DIRCM, sensor fusion suite
Operational Service	F-35B IOC since July 31, 2015; over 100 built	Introduced in 2020; about 32 built as of late 2023
Unit Cost	~\$109 million (per F-35B)	~\$35–40 million
Operational Cost	F-35 program estimated lifetime cost > \$1.5 trillion (total fleet)	Less well documented; lower unit cost implies lower O&M overall

Export Version	Foreign Military Sales (F-35B available to US allies)	Su-57E export version marketed
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Strategic Considerations for India

India's defense ties with both Russia and the US make the decision complex. Russia has been a longstanding defense partner, known for easier technology transfer and fewer restrictions. The US, while offering advanced systems, often includes stringent end-use monitoring clauses.

- **Technology Transfer:** Russia is more open to sharing tech; the US is more restrictive.
- **Sanctions Risk:** Buying from Russia risks CAATSA-related US sanctions; buying from the US risks geopolitical dependencies.
- **Parts and Servicing:** Russian jets can be supported locally with fewer dependencies.
- **Geopolitical Alignment:** A deal with the US could strengthen Indo-Pacific ties, especially in countering China.

Global Landscape

- F-35: Operated by over 14 nations, including the US, UK, Italy, Australia, and Japan.
- Su-57: Operational only in Russia, with no confirmed international buyers yet.

China, meanwhile, is rapidly closing the gap with over 200 J-20 stealth fighters and a growing fleet of J-35s, posing a real threat to India's air dominance.

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