



DRDO & Research & Development:

Major R&D Breakthrough: Integrated Air Defence Weapon System (IADWS)

A significant highlight of DRDO's recent R&D efforts is the successful maiden flight test of the Integrated Air Defence Weapon System (IADWS). This multi-layered defense shield, tested on August 23, 2025, off the coast of Odisha, represents a major stride towards India's self-reliance in defense technology.

Key components of the IADWS include:

Quick Reaction Surface-to-Air Missile (QRSAM):

Provides a mobile frontline defense with a range of up to 30 km, capable of protecting armored columns on the move.

Very Short Range Air Defence System (VSHORADS):

A man-portable system for neutralizing low-altitude threats like drones and UAVs.

High-Power Laser-based Directed Energy Weapon (DEW):

A futuristic weapon that uses a high-energy laser to destroy targets at speeds of light, with a current range of 3.5 km.

The system's centralized command and control center, developed by the Defence Research & Development Laboratory (DRDL), demonstrated its ability to simultaneously engage and destroy multiple aerial targets. This test is a critical step towards realizing Mission Sudarshan Chakra, an ambitious national project announced by Prime Minister Narendra

Modi to create a comprehensive air defense shield for India's critical assets.

Other Notable Projects and Collaborations

Aero-Engine Development: DRDO is advancing a collaboration with the French company Safran to co-develop a new 120-kilonewton jet engine for India's indigenous fifth-generation stealth fighter, the Advanced Medium Combat Aircraft (AMCA). This project aims to achieve 100% transfer of technology, a crucial step in overcoming India's long-standing reliance on foreign jet engines.

SATCOM Datalink for Tejas and AMCA: In a partnership with the private sector, DRDO's Defence Electronics Application Laboratory (DEAL) is developing a Satellite Communication (SATCOM)-based datalink for the Tejas Mk2 and AMCA aircraft. This technology will enable secure, real-time, and beyond-line-of-sight communication, significantly enhancing the operational capabilities of these platforms.

Missile and Munitions Testing: The organization continues to conduct successful flight tests of its existing and upcoming missile systems. Recent tests include the Pralay missile and the Astra BVRAAM (Beyond Visual Range Air-to-Air Missile) with an indigenous Radio Frequency (RF) seeker.

Indigenous Prosthetics: In the medical and rehabilitation field, DRDO, in collaboration with AIIMS, has unveiled the ADIDOC-Optimised Carbon Foot Prosthesis. This is a cost-effective, "Made in India" advanced carbon fiber prosthetic designed for high-performance users.





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MCQS

1. Which of the following is a key component of the newly tested Integrated Air Defence Weapon System (IADWS)?

- A) Pinaka Multi-Barrel Rocket Launcher
- B) Akash-NG Missile System
- C) High-Power Laser-based Directed Energy Weapon (DEW)
- D) INS Vikrant Aircraft Carrier

Answer: C) High-Power Laser-based Directed Energy Weapon (DEW)

The IADWS is a multi-layered defense shield that includes the Quick Reaction Surface-to-Air Missile (QRSAM), the Very Short Range Air Defence System (VSHORADS), and a High-Power Laser-based Directed Energy Weapon (DEW), all controlled by a centralized command system.

2. What is the primary objective of "Mission Sudarshan Chakra"?

- A) To develop a new series of naval submarines
- B) To create a comprehensive air defense shield for India's critical assets
- C) To design and test an indigenous space launch vehicle
- D) To establish a new satellite communication network

Answer: B) To create a comprehensive air defense shield for India's critical assets
Mission Sudarshan Chakra is an ambitious national project announced by the Prime Minister to establish a comprehensive air defense shield to protect India's critical assets from aerial threats. The successful test of the IADWS is a critical step towards this mission.

3. What is the name of the new jet engine being co-developed by DRDO and the French company Safran for the AMCA fighter jet?





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- A) Kaveri Engine
- B) Shakti Engine
- C) 120-kilonewton jet engine
- D) Tejas Engine

Answer: C) 120-kilonewton jet engine

DRDO is collaborating with the French company Safran to co-develop a new 120-kilonewton jet engine. This project is a crucial step in achieving self-reliance in aerospace technology for India's indigenous fifth-generation stealth fighter, the Advanced Medium Combat Aircraft (AMCA).

4. What is the purpose of the SATCOM-based datalink being developed by DRDO for the Tejas and AMCA aircraft?

- A) To improve the aircraft's fuel efficiency
- B) To enable secure, real-time, and beyond-line-of-sight communication
- C) To enhance the stealth capabilities of the aircraft
- D) To increase the aircraft's cruising altitude

Answer: B) To enable secure, real-time, and beyond-line-of-sight communication

The Satellite Communication (SATCOM)-based datalink, developed in partnership with the private sector, will allow the Tejas and AMCA aircraft to have secure, real-time, and beyond-line-of-sight communication, significantly enhancing their operational range and coordination capabilities.

5. Which new indigenous prosthetic was unveiled by DRDO in collaboration with AIIMS?

- A) Optimised Carbon Foot Prosthesis (ADIDOC)
- B) Bionic Limb System (BLS)
- C) Advanced Robotic Prosthetic (ARP)
- D) High-Performance Foot (HPF)

Answer: A) Optimised Carbon Foot Prosthesis (ADIDOC)

In the medical and rehabilitation field, DRDO and AIIMS collaborated to unveil the ADIDOC-Optimised Carbon Foot Prosthesis. This is a cost-effective, "Made in India" carbon fiber prosthetic designed for high-performance users.

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