

AFRL

SHiELD ATD: BRINGING LIGHT TO THE FIGHT

What is SHiELD?

SHiELD represents the next generation in directed energy technology. The Self-protect High Energy Laser Demonstrator (SHiELD) is an advanced technology demonstration (ATD) which leverages cutting edge research across the Air Force Research Laboratory (AFRL) portfolio. The goal is to advance the maturity of high-energy lasers weapon systems technologies and demonstrate their readiness for transition to the warfighter as an operational military capability for a variety of airborne platforms.

SHiELD embodies generational advancements in airborne laser weapon technologies. Decades of research driven by AFRL along with our industry and government partners has led to smaller, increasingly powerful and more precise laser weapons. Today's technology makes it possible to house a laser with missile-killing power within a pod roughly the size of an external fuel tank.

How will the Air Force Utilize SHiELD?

SHiELD will establish new options for protecting aircraft in contested environments. Working synergistically with existing Air Force assets to defeat a broad variety of incoming threats, these technologies offer new capabilities to our warfighters, thereby increasing the lethality and survivability of our Air Force against enemy threats.

Some Key Features of SHiELD:

- Self-protection against incoming threats
- Engagement of multiple targets quickly, over a wide field of regard, with a deep magazine
- Compensation for laser beam-spoiling transonic turbulence effects
- Mature laser weapon system with a compact and rugged exterior
- Applicable to a wide variety of aircraft types.

What are the Key Features of the SHiELD Airborne Laser Weapon System Demonstrator?

Advances in electric laser technology combined with cutting edge energy storage solutions, advanced materials, control systems and state-of-the-art manufacturing techniques has made possible a rugged and compact laser weapon and beam control system capable of performing in demanding flight environments.

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SHiELD's advanced beam control and turret design compensates for the disruptive effects of transonic turbulence over a wide field of regard. The compact and ruggedized design supports a variety of potential missions and threat scenarios, including precision attack and aircraft protection. With its deep magazine that can be recharged by aircraft power, SHiELD can engage with multiple targets without needing to return to base to rearm.

Sophisticated command and control systems allow a single operator to control the system. Modular packaging and simplified system interfaces provide SHiELD with "plug and play" capability suitable for multiple platforms.

How will SHiELD Benefit U.S. Warfighters?

SHiELD demonstrates game-changing technology which amplifies the enduring attributes of air power—speed, range, flexibility, and precision. SHiELD enables future solutions to battlefield threats, across multiple platforms, and ensures that the Air Force is well positioned to maintain air superiority in increasingly contested environments. This airborne laser weapon system holds the potential to transform the battlefield by providing U.S. warfighters with a key competitive advantage.

About AFRL

The Air Force Research Laboratory is the primary scientific research and development center for the Department of the Air Force. AFRL plays an integral role in leading the discovery, development and integration of affordable warfighting technologies for our air, space and cyberspace force.



Demonstrator Laser Weapon System Beam Director is a test surrogate for the Air Force Research Laboratory's SHiELD Airborne Laser System. Photo credit: Courtesy

With a workforce of more than 11,000 across nine technology areas and 40 other operations across the globe, AFRL provides a diverse portfolio of science and technology ranging from fundamental to advanced research and technology development. For more information, visit: www.afresearchlab.com