



Navy Unleashed: Laser Weapons Will Change Warfare Forever

Equipped with AI for instantaneous targeting, directed energy weapons are the future of warfare. The Navy is the first adopter but as weapon size shrinks, they will become ubiquitous. □ TN Editor

If swarms of enemy small attack boats armed with guns and explosives approached a Navy ship, alongside missile-armed drones and helicopters closing into strike range, ship commanders would instantly begin weighing defensive options - to include interceptor missiles, electronic warfare, deck-mounted guns or area weapons such as Close-in-Weapons System.

Now, attacks such as these will also be countered with laser weapons being added to the equation, bringing new dimensions to maritime warfare on the open sea.

By 2021, [U.S. Navy](#) destroyers will be armed with new ship-fired lasers able to sense and incinerate enemy drones, low-flying aircraft and small boat attacks — all while firing at the speed of light.

Lasers have existed for many years, but the Navy is now adjusting emerging Tactics, Techniques and Procedures to how new high-powered, ship-fired lasers will change ship defenses....and attack options.

Lockheed Martin and the Navy have been working on ground attack tests against mock enemy targets to prepare high-energy lasers for war. The weapon, called High-Energy Laser and Integrated Optical-Dazzler with Surveillance - or HELIOS - is engineered to surveil, track and destroy targets from an integrated ship system consisting of advanced radar, fire control technology and targeting sensors.

Working with the Navy, Lockheed has recently completed its Systems Design Review for HELIOS, a process which examines weapon requirements and prepares subsystems and designs. The intent is to engineer an integrated tactical laser system able to receive “real time operating feedback well in advance, before the system hits the ship,” said Brendan Scanlon, HELIOS Program Director, Lockheed.

The farther away an incoming attack can be detected, the more time commanders have to make time-sensitive combat decisions regarding a possible response. Therefore, having one system that synthesizes sensing and shooting changes the equation for maritime warfare.

Connecting HELIOS’ fire control with ship-based Aegis Radar, used for missile defense, enables a combined system to gather surveillance data from the radar while preparing to destroy the targets.

“Sensors provide cues to laser weapons, with the Aegis operator in the loop. You can use optical sensors to decide what else you are going to do, because the weapon tracks between Aegis and the laser subsystem,” Scanlon added.

This technical range enables some new mission possibilities for the laser weapon, such as an ability to use the laser weapon to “obscure adversaries optical sensors.” This can bring a number of advantages, such as throwing incoming drone fire, helicopter attacks or even anti-ship missiles off course.

Developers are now working on a handful of technical challenges known

to make it difficult for mobile lasers to operate on certain platforms, without finding a way to accommodate large amounts of power. The Navy's Program Manager for the Zumwalt-class destroyers, Capt. Kevin Smith, addressed this recently at Sea Air Space, explaining that a "power surge" is needed to operate lasers on ship.

"For directed energy weapons you need a surge. There is technology we are looking at right now to assess how the ship can have the energy storage that would facilitate that surge capacity," Smith said.

[Read full story here...](#)