

**NORTHROP GRUMMAN**



# SOLID-STATE LASER WEAPONS

*Game-Changing Capabilities for Joint Defense*

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## Game-Changing Capabilities for Joint Defense

Northrop Grumman, the industry leader in laser weapon systems for defense applications, is accelerating high-power solid-state lasers for operational military use.

With more than 35 years of laser development, Northrop Grumman is building on its expertise as the sole developer of megawatt-class chemical laser weapon systems to rapidly advance solid-state lasers for military utility and application.

Under Phase 3 of the Joint High Power Solid-State Laser (JHPSSL) program contract with the Army's Space and Missile Defense Command, Northrop Grumman will demonstrate the first 100 kW solid-state laser in 2009, having already advanced the Technology Readiness Level of other critical components in preparation for operational field demonstrations.

Northrop Grumman is pushing the envelope of high-power solid-state technology because of its great potential to provide the military with a multi-platform, multi-mission capability. Weaponized electric lasers will complement kinetic systems, bringing speed-of-light, ultra-precision and force protection to the battlefield.

With deep magazines, scalable in power to address specific threats, these operational weapons will provide crucial offensive and defensive military advantages at the strategic, operational, and tactical levels of warfare.

Laser weapon systems provide solutions to advanced and emergent threats for various platforms such as ships, tactical aircraft, and ground combat vehicles. Northrop Grumman's demonstrated laser expertise, combined with its proven weapons system integration approach, offers revolutionary military capabilities needed to protect tomorrow's warfighters.

**Northrop Grumman Laser Systems:  
Defense at the Speed of Light**

### Solid-State Lasers at Northrop Grumman

#### Performance History and Battlefield Readiness

- |      |   |      |   |
|------|---|------|---|
| 1995 | Record brightness for solid-state laser in the near-IR  | 2007 | Specialized Directed Energy Production Facility opened to develop and produce high energy laser systems for military use  |
| 1996 | Record brightness for solid-state laser in IR and green (Active Tracker Laser)  |      | Selected by the U.S. Army for Phase 1 of the High Energy Laser Technology Development (HEL TD) program to produce a 100kW mobile, solid-state laser weapon system |
| 1999 | Record output power for mid-IR solid-state laser (DARPA/Tri-Services Mid IR II Laser)   |      | JHPSSL Phase 3 exceeded all demonstration requirements with high brightness, compact 15kW laser chain   |
| 2000 | Record brightness for solid-state laser at 5.4 kW (Precision Machining Laser)   | 2008 | Won Phase 2 of the Missile Defense Agency's solid-state Advanced Track Illuminator (ATILL) laser development contract   |
| 2003 | Delivered the Beacon Illuminator Laser (BILL) to the Airborne Laser program; BILL is the brightest, flight-qualifiable, kilowatt class solid-state laser  |      | Delivered first production-line 15kW solid-state laser (Vesta II) to the Air Force Research Laboratory  |
|      | Selected to develop the Strategic Illuminator Laser (SILL) for the Missile Defense Agency and ABL   |      | JHPSSL Phase 3 set new industry record in solid-state lasers at 30 kW with excellent beam quality for more than 40 minutes total                                  |
| 2005 | Selected to develop JHPSSL Phase 3 to achieve 100 kW electric laser milestone   |      | Selected by the U.S. Army for the Phase 2, Option 2 study on HEL TD   |
|      | Government tested JHPSSL, Phase 2 at 27.7 kW for more than 300 seconds  |      | Northrop Grumman announces a new rugged, 15kW electric laser system designed for the battlefield and scalable to >100kW using JHPSSL architecture                 |
| 2006 | Introduced Vesta, a compact, high-power, solid-state laser breadboard system with excellent beam quality using JHPSSL architecture                        |      |   |
|      | Strategic Illuminator Laser (SILL) successfully fired most powerful, continuously pulsed illuminator laser to date, designed for air and space operations |      |   |

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