HELMTT

High Energy Laser Mobile Test Truck

The High Energy Laser Mobile Test Truck is a data collection asset providing risk reduction for future high energy laser demonstrators and weapon systems

The HELMTT, formerly the High Energy Laser Mobile Demonstrator, is a technology integration and demonstration effort with a solid state laser system, agile beam control system, and supporting subsystems integrated into a large tactical vehicle. The goal is to integrate and demonstrate maturing technologies to the point where lethal engagements in a relevant environment can be demonstrated. The Heavy Expanded Mobility Tactical Truck-based HEL MD became HELMTT when the Army decided in early fiscal year 2016 to integrate a more compact laser system on a family of medium tactical vehicles. The HELMTT provides risk reduction for Army high energy laser system technology development.

- Army's first mobile high energy solid-state laser platform
- Rugged beam control system
- Modular building block aproach
- Speed-of-light engagement of threats with pinpoint precision
- Demonstrated lethal effects on small caliber mortars and unmanned aerial systems and potential intelligence, surveillance, and reconnaissance capability

HELMTT

Purpose

The High Energy Laser Mobile Test Truck provides risk reduction to support development of future high energy laser systems. The HELMTT serves as a platform to verify performance/capabilities of promising and maturing technologies. As a component or subsystem matures to the point where high energy laser system demonstration is needed, it will be integrated into the HELMTT. The modified HELMTT configuration will then go to a test range and verify system performance with the new component/subsystem. The results will be analyzed to determine potential benefits to future high energy laser demonstrators or weapon systems.

Components

The HELMTT currently consists of a 10 kW laser projected through a precision pointing, high-velocity target tracking beam control system. To support the laser and beam control system, the HELMTT has power and thermal management systems that power and cool all the subsystems. A Battle Management, Communications, Command and Control, Computers and Intelligence subsystem receives target cues from radars and points the laser beam to engage the targets.

There are a number of planned upgrades to the HELMTT. Those include: improved container cooling system, upgraded fine track sensor (fiscal year 2017); improved target tracking algorithms (fiscal year 2017); integration with the Army Command and Control System and a 50 kW-class laser integration and demonstration (fiscal year 2018).

Data Collections and Warfighter Experimentation

Before becoming the HELMTT, this system destroyed small-caliber mortars and a Group 2 unmanned aerial system during fiscal year 2014. During fiscal year 2014 and 2015, the system collected more than 4 TB of laser beam propagation data in environments ranging from coastal to high desert. The HELMTT participated in the Maneuver Fires Integration Experiment 2016 (MFIX-16) where it downed 15 Group 1 unmanned aerial systems, most of them were quad copters. SMDC will participate in MFIX-17 with a Stryker-based laser system.

Current System	
Laser	Current: 10 kW modified commercial fiber laser Fiscal year 2018: 50 kW-class fiber laser
Beam Control System	50 cm aperture retracting telescope, target illuminator, low jitter precision pointing and tracking system
Acquisition and Track Sensors	Infrared-based wide field-of-view for target acquisition and infrared-based narrow field-of-view fine target tracking
Warfighter Machine Interface	Ruggedized laptop with "X-box"-type controller
Battle Management Command, Control, Communications, Computers, and Intelligence	Modular design with manual/semi-automatic/automatic target acquisition, aim-point selection, and aim-point management
Electrical Power	On-board generator for "housekeeping" load. External generators for laser operations. Potential for batteries to power the laser in the future.
Thermal Management	Chilled-water-to-refrigerant system for laser and standard heating, venting and air conditioning for all other subsystems
Platform – High Energy Laser Mobile Test Truck	500 hp Caterpillar C-15 engine, Allison 4500 SP/5-speed automatic transmission, 8x8 axle, 16-ton payload capacity

For more information, please contact:
USASMDC/ARSTRAT Public Affairs Office
P.O. Box 1500
Huntsville, AL 35807
Phone: 256-955-3887
www.army.mil/smdc
www.facebook.com/armysmdc
www.twitter.com/armysmdc
www.flickr.com/armysmdc
www.youtube.com/armysmdc

Distribution A 1116-02