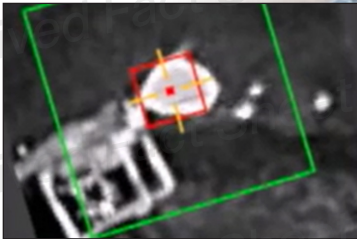




Warfighter Experimentation with High Energy Lasers



Maneuver and Fires Integration Experiment (MFI) to inform and assess systems for use of future fire support

Warfighters face challenges in all aspects of their mission. Soldiers must have weapons that offer precision, controllability, predictability and repeatability to meet the threats of today and the future. A laser combat weapon system offers these attributes enabling enhanced tactical battlefield operation at the brigade and lower levels with a cost-per-engagement substantially lower than the current defensive system. The Fires Center of Excellence-sponsored Maneuver and Fires Integration Experiment offers a chance for Warfighters to gain some hands-on experience with new technologies, such as high energy lasers to provide feedback on requirements for future weapon system development and to gain insight into development of techniques, tactics and procedures to employ these new technologies.

Operational Approach

- Demonstrate lethal effects against unmanned aerial systems and ground targets
- Warfighter hands-on experience to learn how high energy laser systems function
- Gain feedback on how to better develop high energy lasers systems to meet Warfighter needs
- Familiarize Warfighters with high energy laser systems for techniques, tactics and procedures development

Warfighter Experimentation with High Energy Lasers

High energy laser systems can turn the cost-per-engagement equation in favor of U.S. and allied forces. The average cost of a high energy laser engagement is approximately \$30 worth of diesel fuel, which is the “ammunition” for a solid state laser. The U.S. Army Space and Missile Defense Command/Army Forces Strategic Command’s High Energy Laser Mobile Test Truck, or HELMTT, and the Mobile Expeditionary High Energy Laser, or MEHEL, are both solid state lasers, more specifically, fiber lasers. The HELMTT contains a 10 kW laser and the MEHEL contained a 2 kW laser for MFIX 2016.

U.S. Army and U.S. Marine Corps weapon operators were able to operate both the HELMTT and MEHEL during MFIX 2016 against unmanned aerial systems and ground targets. During the April 2016 event at Fort Sill, Oklahoma, the two lasers systems demonstrated lethality against a variety of simulated threats. More than 30 quad-, hexa-, and octo-copters were shot down by these two high energy lasers.

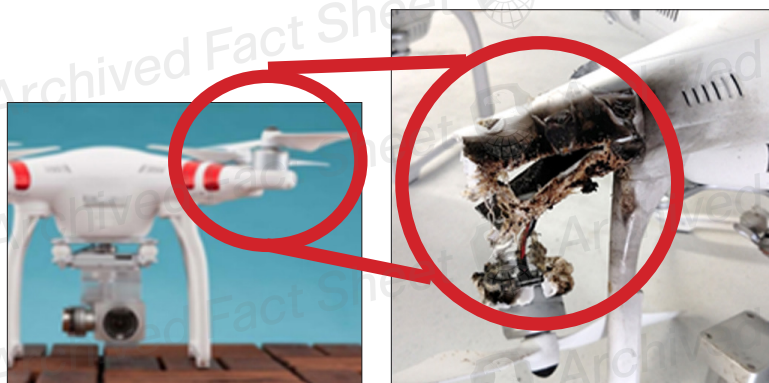
The HELMTT is a USASMDC/ARSTRAT asset that is providing risk-reduction for the next generation of high energy laser science and technology demonstrators. USASMDC/ARSTRAT obtained a Stryker chassis and loaned it to industry to serve as a platform for internal research and development laser and support systems.

The HELMTT will be undergoing upgrades during MFIX 2017. A 50 kW-class laser will be integrated for a system demonstration in fiscal year 2018. USASMDC/ARSTRAT and the Aviation and Missile Research, Development, and Engineering Center are upgrading the MEHEL to MEHEL 2.0. The 2.0 configuration will have a 5 kW laser and a number of AMRDEC’s Counter-unmanned aerial system Mobile Integrated Capability components to increase the robustness of the MEHEL 2.0’s capability.

The payoff for Warfighters is progress in multiple areas toward a weapon system that will provide: cost effective engagements, reduced manning, significantly reduced logistics burden, and a multiple mission capable platform.

HELMTT	
Laser	10 kW 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
Platform – Heavy Expanded Mobility Tactical Truck (HEMTT)	500 hp Caterpillar C-15 engine, Allison 4500 SP/5-speed automatic transmission, 8x8 axle, 16-ton payload capacity

MEHEL 2.0	
Laser	2 kW (fiscal year 2016) and 5 kW (fiscal year 2017) fiber laser
Beam Control System	10 cm aperture retracting telescope, target illuminator, adaptive optics, 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
CMIC	Maneuver Aviation Fires Integrated Application Battle Operating Software Suite
Platform – Stryker	350 hp Caterpillar C-7 engine, Allison automatic transmission, 8x8 axle, 8-ton payload capacity



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