Boeing Completes Testing of Tactical High Energy Laser

The Boeing Company [NYSE: BA] has successfully completed proof-of-concept testing of a new high-energy chemical laser designed specifically for tactical weapons applications. The new device is derived from the chemical-oxygen iodine laser (COIL) technology originally developed by the Air Force Research Laboratory and now in development for the U.S. Air Force Airborne Laser Program by TRW. In contrast to current COIL technology, the new Tactical COIL is optimized for power levels of 100 - 500 kW, operates at ground level, and emits no exhaust.

"Tactical COIL technology permits, for the first time, highly mobile, self-contained laser weapons with significant lethality at engagement ranges up to 10 km for ground-to-air defensive systems, and over 20 km for air-to-ground or air-to-air systems," said Mike Skolnick, vice president of the Laser & Electro Optical Systems unit of Boeing. "Packaging concept studies show complete weapons systems in roll-on, roll-off installations for rotorcraft (V-22, CH-47), aircraft (AC-130), and ground vehicles."

Application studies have concentrated on the Airborne Tactical Laser (ATL) system being developed by Boeing, which puts a 300 kW laser into a V-22 Osprey platform with an onboard optical sensor suite. Operating below cloud ceiling, ATL's can provide a fast-response defensive screen against low altitude anti-ship or overland cruise missiles in high-threat environments. A ground-based Tactical COIL sized to counter short range tactical rockets could be fully contained in one or two vehicles. With a slightly different set of sensors and fire control, the ATL also offers a unique ultra-precise strike capability for operations other than war, where pinpoint accuracy, tactical standoff and no collateral damage are dominant considerations.

Recently, a Boeing proof-of-concept demonstration laser operated routinely at approximately 20 kW during the test series. With exceptional reliability and demonstrated repeatability, these tests explored performance over a wide range of operating conditions. For several of the tests, the laser exhaust gases were completely captured in a small sealed exhaust system. Data confirmed the overall laser efficiency and the sealed exhaust system's ability to meet the requirements for a scaled-up tactical COIL weapon system.

"This innovative COIL technology is capable of tactical mobile operations and fills a gap between the existing very-large chemical lasers planned for the Airborne Laser and the Space-Based Laser and the electrically powered solid state lasers which could be available in the future," Skolnick said. "A portable tactical COIL device of 100 to 300 kW, packaged into a standard shipping container or carried aboard a rotorcraft, could be built in about 2 years."

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