



LOCKHEED MARTIN COHERENT TECHNOLOGIES (LMCT)

(FORMERLY COHERENT TECHNOLOGIES, INC)

COHERENT LIDAR FOR WIND DETECTION AND TRACKING

LMCT's WindTracer® LIDAR detects and tracks hazardous weather conditions

About the Technology

With a fleet of more than 4,000 aircrafts, the Navy has a need for innovative technology to improve flight safety, and in particular to measure wind fields around air stations and aircraft carriers. Atmospheric winds can affect aircraft missions and a broad range of weapons systems, including the TOMAHAWK and all ballistic missiles. Measuring wind speed and direction around an aircraft currently involves deck-level anemometers, instruments long used for this purpose but ineffective for providing accurate wind data.

Lockheed Martin Coherent Technologies (LMCT) delivers instruments that measure wind speed and direction using Light Detection and Ranging Systems (LIDAR), an advanced remote sensing technique that uses pulsed laser light instead of radio waves (radar) to detect particles and varying conditions in the atmosphere. The company has developed a pulsed coherent 2 limiting diode-pumped solid-state LIDAR receiver on an injection-seeded, Q-switched, 2 micron laser that meets Navy requirements for remote sensing, moderate range, high spatial resolution wind field measurements around air stations and aircraft carriers. LMCT received funding from the Office of Naval Research (ONR) to use LIDAR on the CIRPAS (Center for Interdisciplinary Remotely-Piloted Aircraft Studies) Twin Otter aircraft for research of the lower atmosphere.

Military and Commercial Significance

LIDAR is ideally suited for range-resolved, volumetric clear wind-field mapping, and for measuring aerosol concentration levels over municipal-sized areas. LIDAR collects local area measurements of wind speed and direction between the regional surface and 3-kilometer altitude, with a vertical resolution of 100 meters or better. LMCT's solid-state LIDAR is field deployable with an unattended round-the-clock operation capability. All of these attributes result in the ability to enhance flight safety by collecting better data on wind speed, turbulence, and microbursts.

Topic Number: N92-027
(SPAWAR: PEO
C4I & Space)

SBIR Investment: \$800K
Project Revenue: \$3.4M

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APPLICATIONS

- ONR: CIRPAS- Research of the lower atmosphere
- U.S. Army Research Laboratory – Urban test scenarios
- U.S. Army Dugway Proving Grounds - Truth sensor for chemical biological testing
- Commercial and university aviation facilities

About the Company

Bridging the gap between innovation and application, Lockheed Martin Coherent Technologies (LMCT) is a world leader in the development of laser-based remote sensing systems. The company's technological advances are at the heart of its products designed to meet the rigorous requirements of government, military, and commercial customers. LMCT and its commercial Products Group is a full-service company capable of generating new laser-based technology concepts from technology development and demonstration through product engineering and product manufacturing.