

LIDAR TECHNOLOGY FOR UAV APPLICATIONS

Locate the enemy. Define the terrain. Detect marine hazards. All at the speed of light.

In today's battlespace, deploying the right equipment can mean the difference between victory and defeat. By outfitting your UAVs with Optech's lidar sensor solutions, you can ensure you have the most advanced scanning, detecting, mapping and surveying technology at your disposal.

Optech Incorporated is the world leader in the development, manufacture and marketing of advanced laser-based survey and measurement instruments. We now offer these instruments in small, lightweight configurations, specifically designed for UAV applications.

Visualize your battlespace in three dimensions with the most sophisticated laser scanning systems in the world. Locate your targets, select landing zones and map the terrain without putting your most critical resource - people - in harm's way. Whatever the mission, Optech has the solution you need to gain the upper hand.

Lidar Technology

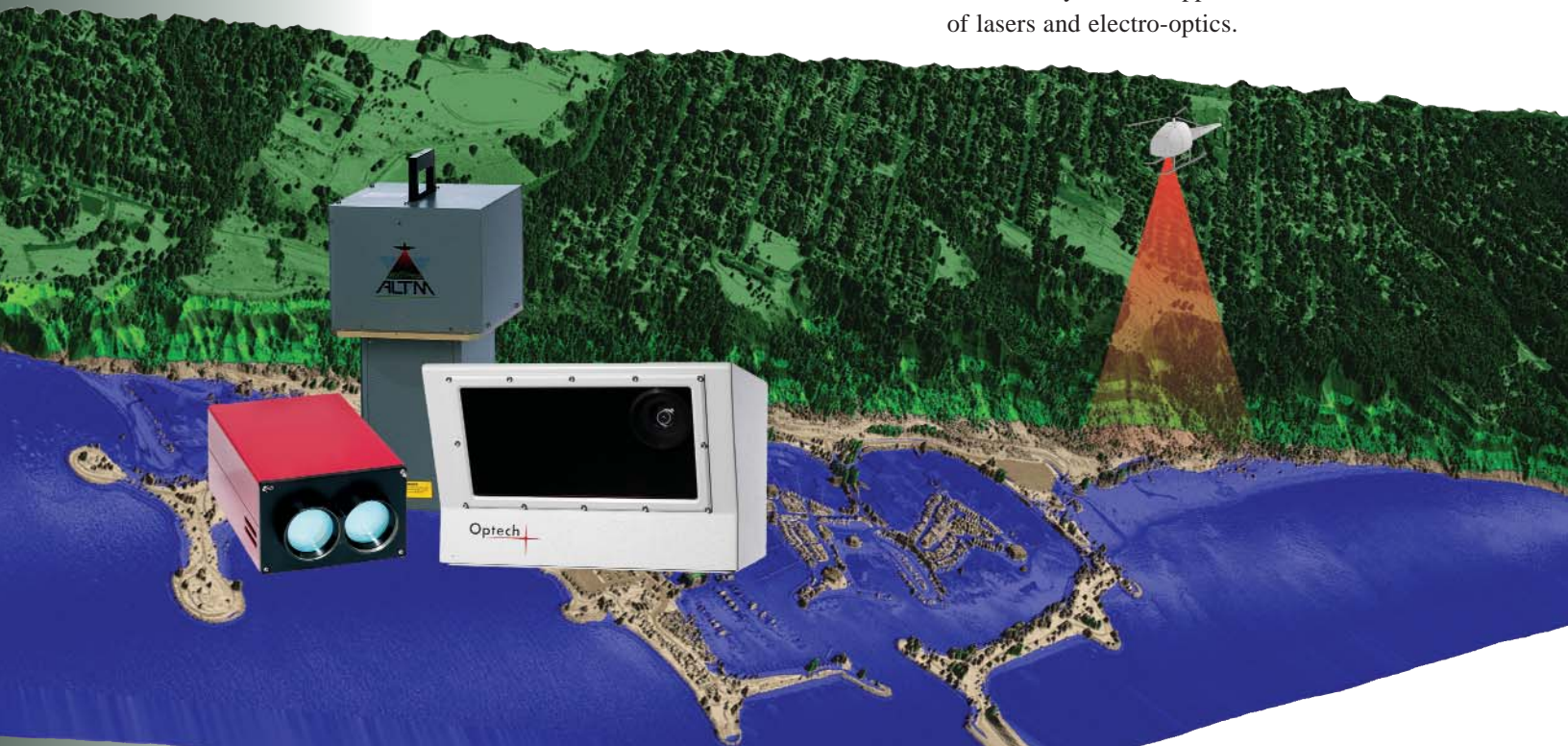
Optech has been providing innovative lidar solutions tailored to meet exacting requirements world-wide for over 25 years. With an eye toward the future, Optech is leveraging their lidar systems expertise to provide UAV solutions. Lidar works like radar, except that our systems send out precise narrow pulses or beams of light rather than broad radio waves. A receiver system times, counts and processes the returning light.

Optech sets the global market standard in airborne laser radar for digital terrain mapping and water depth measurement with our ALTM and SHOALS systems. Our time-of-flight systems produce dense, rapid and highly accurate measurements of terrain elevation or water bottom topography, day or night. With extensive commercial and government contract experience, Optech offers high quality engineering expertise for a variety of UAV applications in the field of lasers and electro-optics.

Images (left to right):

- ADM Laser Altimeter
- ALTM sensor head
- ILRIS-3D

Background Image: Composite Elevation Model of Bluffers Point Marina, Bluffers Park, Toronto, Ontario.



Mapping Applications

Laser Bathymetry

The SHOALS system maps shallow water, shoreline and topography (ground elevations) simultaneously, integrating land and water measurements in the same data set.

- Hydrographic data collection
- Subsurface mine/object detection

Laser Ranging

Our laser rangefinders give precision real-time fixed point range measurements, which can be integrated into various payloads.

- Small rangefinder for surveillance and targeting
- High-speed altimeter for profiling, autoland, geophysical surveying and height of flight measurement



Representation of typical data output using Optech's Laser Altimeter for profiling, autoland and height of flight measurements. Using first and last pulse technology, the Laser Altimeter can identify both forest canopy and forest floor.

Remote Sensing

Whatever your remote sensing needs, Optech can offer a direct-to-digital lidar solution that's right for you. Optech's lidar payload solutions are small, lightweight, have low-power requirements, and are suitable for a variety of fixed-wing and rotary UAVs. Whether you are searching for enemy targets, co-ordinating fire surveillance missions, compiling research, or monitoring nuclear plants, remote oil pipelines or the weather, Optech offers safe, fast and efficient systems that will meet your needs.

Laser Imaging

ILRIS-3D is a laser imaging system that provides a direct-to-digital 3D model of any scene. Sophisticated image-capture and software tools deliver the accuracy of close-range photogrammetry.

- Object detection/location
- Obstacle avoidance

Laser Mapping

Optech's ALTM acquires digital elevation data with accuracies equivalent to those of differential GPS, but millions of times faster, without ground contact.

- Topographic data collection:
Active Laser Photos,
Digital Elevation Models,
Composite Elevation Models
(3D map generation) *on front/below*
- Virtual environments

Atmospheric Scanning

Our atmospheric lidar systems detect, measure and track meteorological data, particulates, atmospheric elements/pollutants and provide global atmospheric monitoring and research.

- Cloud ceilometry
- Trace gas and aerosol detection



Above image: Point cloud image of power lines and support tower, scanned with ILRIS-3D laser imaging system.

Below image: Representation of an airborne laser bathymetry system, mapping shallow water and the shoreline.



The US Army, Navy and Air Force have counted on Optech as a trusted partner for years.

Isn't it about time you had lidar working for you?

Optech

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