

LiteMapper

Airborne Lidar Terrain Mapping System

AFFORDABLE

LiteMapper is a series of **affordable Airborne LIDAR Terrain Mapping Systems** for topographic surveys in 3D with fixed-wing aircraft and for 3D corridor mapping with helicopters. They are designed to provide highly accurate measurements in a compact and lightweight package that easily can be installed even on small survey aircraft.

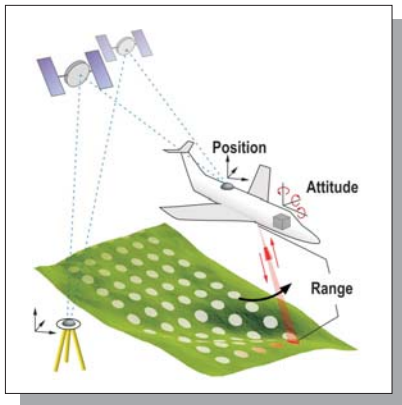


Image showing the operation of the LiteMapper system.

HIGH ACCURACY

LiteMapper laser scanners sample the surface in **parallel lines** with regular point spacing both in and across the direction of flight to provide the most accurate surface representation. The scan speed can be varied in a wide range to provide very dense point spacing within each scan.

The **continuously rotating scanner** used for beam deflexion is insensitive to temperature variations and accelerations typically experienced under airborne operating conditions, providing highly accurate beam pointing *by design*.

LIDAR terrain mapping with the LiteMapper systems is a highly efficient method to rapidly acquire three-dimensional terrain and surface data with high accuracy. The **laser beam directly measures the 3D coordinates** of up to 66000 surface points per second. Areas of more than 100 sqkm can be surveyed in only one hour.

COMPLETE SOLUTION

With a fully digital process chain from primary data acquisition through all processing stages to the final product, LiteMapper provides the basis for efficient production and rapid turn-around. LiteMapper is a **total-turnkey solution** containing all necessary components in hardware and software.

EASY TO USE

Automated data acquisition with LiteMapper is achieved by tight integration with the CCNS (Computer Controlled Navigation System) precise guidance system. The CCNS system guides the pilot and controls the data registration during flight, a dedicated LIDAR operator is not mandatory.

Both LIDAR and optional digital image data are directly geo-referenced through the AEROcontrol dGPS/IMU-based system that continuously registers sensor position and attitude in flight. Ground control efforts can thus be reduced to a minimum; typically one reference surface per project is sufficient.



LiteMapper 5600 hardware components.

APPLICATIONS

- CORRIDOR MAPPING:**
 - highway / railway / pipeline / power line
- FLOOD RISK MANAGEMENT:**
 - shoreline protection / river flooding simulation
- URBAN MANAGEMENT:**
 - cadastral registration (trees, buildings)
 - waste management
 - route planing (emergency, traffic)
 - skyline mapping / tourism support
- FOREST MANAGEMENT:**
 - forest canopy height
 - single tree segmentation, height, crown diameter
 - classification (deciduous, coniferous forest)
- OPENCAST PITS, ARCHEOLOGY, APPLIED RESEARCH**

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APPLICATION-DRIVEN COMPONENTS

LiteMapper 2400 is designed for low-altitude corridor mapping applications from helicopters. From altitudes of up to 450m above ground it collects up to 20000* surface coordinates per second in three dimensions within a field-of-view of 60 or 80 deg, plus return signal intensity (surface reflectance in the near infrared).

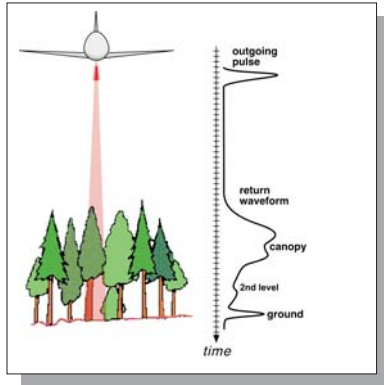


Image showing the fully digitized laser beam return.

AVAILABLE OPTIONS:

LM2400:

- double sensor head configuration for twice the point density

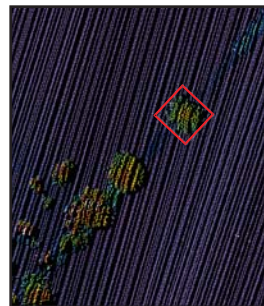
LM5600:

- removable ultra-high capacity data storage for efficient data transfer

DigiCAM:

- complementing digital modular camera system with 22 or 39 Mpixs for brilliant visual imagery in RGB or CIR mode

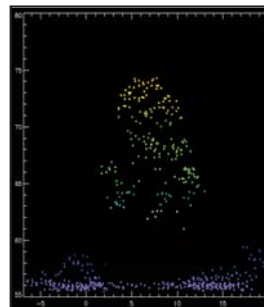
LiteMapper 5600 Single Tree Application



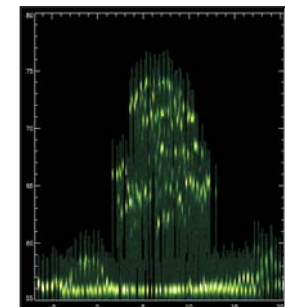
LIDAR Elevation



Digital Camera Image



Discrete Return Profile



Return Waveform Profile

DIGITAL WAVEFORM RECORDING

The **LiteMapper 5600** LIDAR system introduces the new dimension in airborne LIDAR mapping as the first available commercial system to feature high-resolution **waveform digitization and recording**. Complementing the LiteMapper series of high-accuracy 3D-mapping systems, LiteMapper 5600 samples the surface with up to 4 times higher point density and records vertical surface structure with unmatched resolution.

With its **unique ability to digitally record the entire echo waveform** for each individual shot, LiteMapper 5600 takes airborne LIDAR terrain mapping to a new dimension. Not only the heights of the first or last reflecting surface, but also detailed insights into the vertical structure of the surface cover become available. For instance, the vertical density distribution of tree crowns, the vegetation density at different height levels, or the roughness and slope of the surface. Even returns from very close surfaces e.g. low vegetation and ground can be distinguished.

ADVANTAGES & BENEFITS:

LM 2400

Optimally suited for corridor and small area mapping applications, e.g. highway, railway and power line surveys.

Its small size and lightweight construction are main advantages for small helicopters and ultra-light aircraft with limited space, payload weight and power.

LM 5600

First choice for high resolution wide area mapping from fixed-wing aircraft or helicopters for any Application that requires detailed and truly 3D info.

Best suited for vegetation applications due to its ability to record the entire echo waveform.

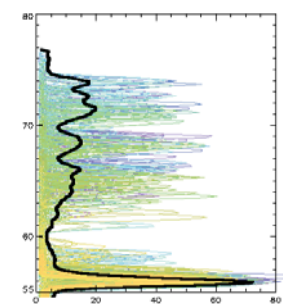
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Aggregated Waveforms