

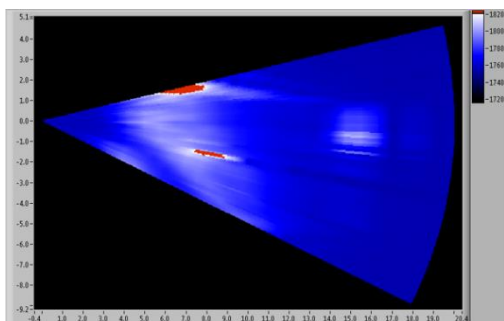


Aeromap

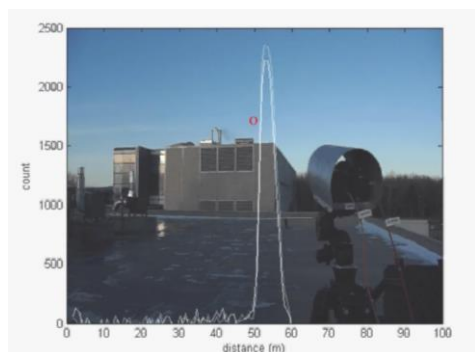
Mapping Sources of Fugitive Emissions

Aeromap is a laser diode-based (NIR) full waveform LIDAR, especially designed for dust and aerosol mapping and monitoring. It identifies and measures relative concentration of aerosol over a range greater than 150 m (500 ft.) with a resolution up to 4.7 cm (typically 75 cm). Aeromap delivers 2D and 3D maps of relative concentration in near real-time for a better understanding of dust generating processes, making it the perfect instrument for fugitive emissions monitoring.

Being eye-safe, Aeromap can be easily deployed on industrial sites or cities. The Aeromap platform is currently at TRL6 and is ready for technology transfer.



2D Map of dust concentration



LIDAR waveform showing dust emission from stack



**AeroMap
NIR Full Waveform
LIDAR**



Aeromap

Near Infrared, Full Waveform LIDAR for Dust and Aerosol Monitoring

Features	Advantages	Benefits
Measures relative concentration of aerosol over a range of 150 m with resolution up to 20 cm (typically 75 cm)	Distribution of aerosol concentration along line-of-sight; Ideal for fugitive emissions monitoring	Equivalent to hundreds of point sensors located along line-of-sight
Typical limit of detection of 50 µg/m ³ @ 150 m	Same order of magnitude of air quality standards for total suspended particulates	Can be used to monitor several types of dust generating processes
Eye safe	Harmless to workers	Can be installed on industrial sites or cities
Additional context camera	Helps define the monitoring area. Provides pictures of “events” with concentration overlay	Easy deployment. Better understanding of aerosol generation processes
Pan & Tilt Unit with mapping speed up to 20°/s. Acquisition speed: 2 to 10 Hz	Delivers 2D and 3D maps in near real-time	Better understanding of aerosol transport processes
On-board Processing	Real-time display of aerosol concentration.	Can be used to trigger alarms

APPLICATIONS

Mining

- Feedback to VOD systems
- Dust mapping and monitoring
- Dust cloud tracking
- Optimization of dust suppression techniques

Bulk material handling

- Identification of dust generating processes
- Fence line monitoring
- Cloud mapping and tracking

Construction and transportation

- Fugitive dust emission monitoring
- Dust control on unpaved roads



Aeromap

Near Infrared, Full Waveform LIDAR for Dust and Aerosol Monitoring

Specifications	Values
Platform use	<ul style="list-style-type: none">Dust and aerosols relative concentration and mapping in air
Laser source	<ul style="list-style-type: none">Laser diode wavelength: 905 nmPulse energy: 3 uJPulse duration: 20 nsMaximum repetition rate: 15 kHz (for eye safety); up to 100 kHz availableAverage power: 75 mW (for eye safety); 300 mW available
Collection	<ul style="list-style-type: none">Field Of View (FOV) : 12 mradAperture: 50 mm
Ranging	<ul style="list-style-type: none">Range : 0 m to 7644 mWaveform length: 6144 m max.Resolution: 4.7 cm to 1.5 m
Detection	<ul style="list-style-type: none">Detector: SiAPDADC characteristics: 12 bits @ 100 MS/s sampling rateOn-board averaging: 1 to 2¹⁶ pulsesDynamic range: 78 dBMax frame-rate: 20 HzSensitivity: tens of µg/m³ @ a range of 150 m; particles properties dependent
Scanning head	<ul style="list-style-type: none">Pan angles: ±180°Tilt angles: [-31°, +83°]Scanning speed: 25°/s max.
Footprint (excluding PTU, tripod and cables)	<ul style="list-style-type: none">Weight: 4.5 kgDimensions: 218 (W) x 208 (H) x 249 (D) mmPower requirement: 24 V-DC @ 24 W, Operating between -20 to +40 Celsius
Communication	<ul style="list-style-type: none">GigE - Remote controllable with VNC client
Software	<ul style="list-style-type: none">Control and data analysis software running on Windows 7 (1 USB 2.0 port , 1 Serial port and 1 Ethernet port are required to connect to the instrument)