Raymetrics PMeye Lidar

a tool to remotely monitor PM pollution.

Mining and quarrying activities produce Particulate Matter (PM) emissions due to the variety of processes used to extract the ore and associated overburden, including drilling and blasting, loading and unloading, and overburden replacement. Fugitive dust emissions from mining and quarrying operations are the sum of emissions from the mining of metallic and nonmetallic ores and coal.

PM pollution adverse effects on human's health, wellbeing and economy are well known and accurate mapping and forecasting is essential to monitor, enforce air quality regulations and mitigation measures, and minimize people's exposure to harmful conditions.

In-situ sensors' frequent maintenance and field calibration can be challenging and costly. Additionally, point measurements do not provide information on the source of the emission or its dispersion.

Remote sensing of PM absolute concentrations at the horizontal plane addresses the need of continuous wide area monitoring right above industrial and urban sites, with high accuracy, spatial and temporal resolution, allowing source localization and dispersion mapping.

Raymetrics PMeye lidar is a novel, state-of-the art, commercial scanning lidar system that successfully tackles this goal.

raymetrics lidar systems

A PMeye Raymetrics Lidar can be used as below:

- **Locate and quantify the main sources of aerosol/dust emissions.**
- **Calculate the contribution and frequency of each source.**
- **Assess emitted plumes behaviour relative to weather conditions and aerosol/dust characteristics.**
- **Evaluate the contribution of neighbouring companies' in the emission.**
- **Forecast the emissions dispersion using the lidar monitoring data through high resolution dispersion and weather forecasting models.**

PMeye additionally serves to iteratively detect, quantify and update emission sources inventory of the monitored area which feed Raymetrics high-resolution dispersion modeling system. This way realistic near future air quality predictions support an advanced warning system and users can proactively identify actions that could reduce emitted PM pollution.

PMeye application ensures that a company can follow its **corporate sustainability** program towards reducing its environmental and climate impact and take the necessary actions to:

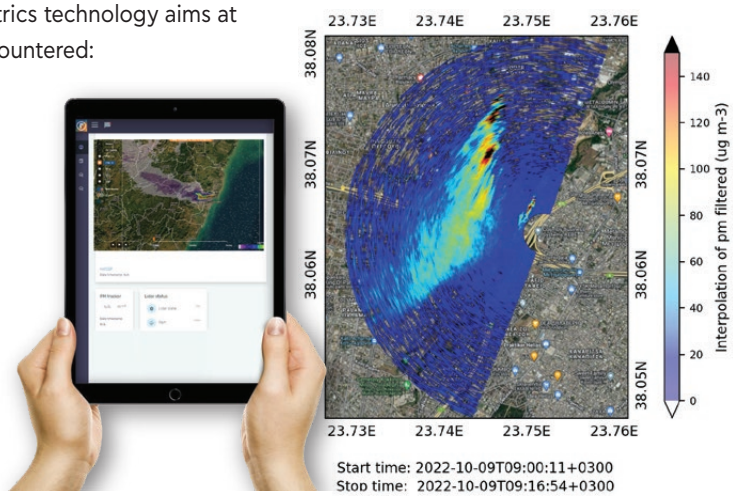
- **strengthen** the environmental management of each facility
- **adjust faculty operations** (plan and apply mitigation strategies, adapt scheduling of plant activities etc) to **reduce emissions** which impact the environment and nearby areas (cities, villages etc etc).
- **Plan and implement risk responses** relative to violations against federal environmental agencies for noncompliance to regulated emission thresholds.

PMeye

Environmental quality standards and implied pollutants emission control are becoming more and more crucial, for the environmental and community friendly operation of cities and industrial plants nowadays, and compliance to the continuously stricter standards is essential.

When it comes to the heavy industry and urban environments, Raymetrics technology aims at successfully addressing the three major problems most frequently encountered:

- identify, quantity and monitor all PM pollution emission sources.
- Provide dispersion models that simulate the monitored emissions, and dispersion in the area, enabling forecasting capabilities.
- Enable control of the effectiveness of any mitigation actions through constant wide area monitoring and forecasting



PMeye is a novel and state-of -the-art technology an innovative tool already adapted by heavy industries in Latin America like TERNIUM steel in Argentina and Brazil, VALE in Brazil, and has been widely used in the past in open mining sites in Chile (CODELCO-ANTOFAGASTA).

Raymetrics PMeye sensor offers:

Wide coverage:

A single Lidar can cover 50Km² area and identify all PM sources.

3D monitoring:

Lidar is the only technology that can monitor horizontal and vertical PM dispersion.

High sensitivity:

Lidar detects PM concentrations down to 10μgr/m³, day and night, levels which are otherwise not detectable by the human eye or EO & IR cameras.

Real-time information:

All data are provided in real-time, giving a good understanding of the temporal behavior of the PM productions.

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