

Gas Mapping LiDAR™ for Distribution Utilities



Gas Mapping LiDAR uses laser technology to scan oil and gas infrastructure to detect, locate, image, and quantify methane emissions. Learn how it's helping the nation's largest distribution utility reduce its methane emissions.

Overview

SoCalGas monitors its service area each year with foot patrols, consistently exceeding regulatory requirements, and wanted to further expand its Leak Detection and Repair (LDAR) program to rapidly and cost-effectively reduce emissions. SoCalGas sought out Gas Mapping LiDAR to detect system and post-meter emissions to efficiently and effectively help them reach their commitment to net-zero emissions by 2045.

Testing Capabilities

SoCalGas began testing Gas Mapping LiDAR in 2019. It conducted several controlled releases to test its capabilities using double-blind tests. More robust R&D continued through early 2021 with additional single- and double-blind controlled release studies and development of internal data management and business workflows. An agreement was signed with Bridger Photonics in 2021 for a multi-year engagement. SoCalGas found that Gas Mapping LiDAR added a more robust LDAR option to target emissions reductions and to better navigate the complexities of the methane environment within a diversely populated area.

How Gas Mapping LiDAR Helps Distribution Utilities

For distribution utilities, a Gas Mapping LiDAR sensor is attached to a helicopter and operates with a sensitivity of 0.5 kg/hr or 26.8 scfh with a 90% Probability of Detection (PoD) in typical conditions with an unobstructed view. The Gen 2 version of the sensor will be implemented in 2022, and tests are underway to determine the PoD at 0.2 kg/hr for distribution utilities. Custom flight areas are created based on customer-prescribed required target areas to maximize emissions reductions. Aviation safety is also a top priority with advanced flight planning and pre-flight safety meetings occurring prior to each day's flight operations.



SoCalGas is the largest gas distribution utility in the nation, with the mission to be the cleanest, safest, and most innovative energy company in America.

It distributes natural gas throughout more than 100,000 miles of pipelines and across six million meters, spanning California from Northern San Joaquin Valley to the California-Mexico and California-Arizona borders.





Bridger Photonics generates a digital map after each flight, providing actionable data for field teams. Based on client needs, thresholds are set for immediate, 24-hour, and 5-10 business day reporting.

The Results

As leaders in the industry, SoCalGas sought to reduce methane emissions and enhance the safety of their workers and communities. Gas Mapping LiDAR helps them achieve these goals and more. Aerial scans increase the efficiency of methane detection, and actionable data allows for quick and safe identification and mitigation of emission sources. The main benefits include:

Reduced Emissions

Robust geo-spatial pinpointing of methane emitter locations provides unmatched insight into methane sources, and quantification of emissions can provide insight into an overall emissions profile.

Improved Safety

Actionable data allows repairs to be prioritized based on the proximity to pipeline facilities and structures allowing dispatch of appropriate crew-types to arrive better prepared for likely findings, improving safety for workers and communities.

Increased Efficiency

Aerial methane mapping provides quick and efficient scanning of an area for methane emissions. Recent and accurate aerial imagery and methane plume data helps to direct ground crews to emission sources.

“ The GML technology provides unprecedented area coverage and spatial resolution for localization of methane emission sources within the very complex methane emissions environment in Southern California. This advancement is a win for the environment, Bridger Photonics, and SoCalGas in our journey toward the ASPIRE 2045 goal to achieve net-zero greenhouse gas emissions in operations and delivery of energy by 2045. ”

– Ed Newton, Gas Engineering Programs Manager, SoCalGas

The Future

Bridger Photonics values the engagement with the entire SoCalGas team from R&D to Operations. This project has greatly informed future R&D efforts and Bridger continues to push the limits of what is possible with aerial deployment of methane detection technologies.

The Gas Mapping LiDAR Generation-2 sensor is set to be released in 2022, with updates that will improve detection sensitivity and additional analytics that will enable more sensitive and efficient detection of methane emissions.