QUANTIFICATION DEFINED

OVERVIEW:

Project Canary is committed to continuously improving our hardware and software solutions through rigorous testing and refinement to create **the most accurate facility-level methane emissions monitoring system.**

We know many on the market are touting "quantification," but what goes into those models isn't always clear. Below you'll find what makes our model stand out, and what exactly goes into developing an emissions quantification model.

Project Canary's current version of quantification is designed to localize and quantify total site emissions – including small intermittent emissions from pneumatic devices and fugitive emissions that persist over long periods of time.

CRITICAL COMPONENTS OF QUANTIFICATION

Continuous monitoring solutions (CMS) transform raw sensor measurements (e.g., ambient ppm readings, wind speed, and wind direction) into useful composite data that operators can use to understand the if/where/when/how much behind an emissions event. It also translates concentrations into a quantified value, a normalized value for true emissions isolated from the effect of atmospheric effects such as wind.

The quality and precision of a CMS system depends on the following:

1. **Input data from sensors:** this is impacted by sensor specs (such as detection limit), data frequency, and sensor placement.

2. **Solution analytics ('quantification model'):** Model quality is critical as the translation of raw data to quantification measurement is based on inferences made by solution analytics. For models to accurately capture emissions, it must account for atmospheric conditions (wind), obstacles, and emission sources.

HIGH-QUALITY SENSOR DATA + SOPHISTICATED ANALYTICS = MORE ACCURATE QUANTIFICATION

PROJECT CANARY QUANTIFICATION APPROACH

Project Canary quantifies total site emissions for more accurate carbon accounting, emissions performance tracking. We combine state-of-the art hardware with industry-leading software solutions to give you the most precise measurements.

Our quantification model can be broken down into 3 primary components:

1. **Post-processing of sensor readings:** Powered by machine learning, we take the individual sensor readings and isolate the effect of wind direction on concentration values.

2. **Forward direction model:** Then, we take the leak locations we gained from our high-resolution drone imagery and simulate emissions from every potential leak source.

3. **Inverse solver:** Once we have those two pieces, we run an inverse solving algorithm to find the best selection of emissions that match what the sensors are measuring.