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Reichardt et al.

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(54) **NATURAL GAS LEAK MAPPER**

FOREIGN PATENT DOCUMENTS

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(57) **ABSTRACT**

(52) **U.S. Cl.** **356/437**; 250/330

(58) **Field of Classification Search** 356/437;
372/22; 250/334, 338.5
See application file for complete search history.

A system is described that is suitable for use in determining the location of leaks of gases having a background concentration. The system is a point-wise backscatter absorption gas measurement system that measures absorption and distance to each point of an image. The absorption measurement provides an indication of the total amount of a gas of interest, and the distance provides an estimate of the background concentration of gas. The distance is measured from the time-of-flight of laser pulse that is generated along with the absorption measurement light. The measurements are formatted into an image of the presence of gas in excess of the background. Alternatively, an image of the scene is superimposed on the image of the gas to aid in locating leaks. By further modeling excess gas as a plume having a known concentration profile, the present system provides an estimate of the maximum concentration of the gas of interest.

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6 Claims, 8 Drawing Sheets

