PORTABLE GAS LEAK DETECTION SYSTEM

Sandia National Laboratories has developed imaging systems for the detection, quantification and monitoring of gaseous leaks. Using the backscatter absorption gas imaging (BAGI) technique, these devices can remotely produce real-time video images of gases invisible to the human eye. This simplifies the leak-detection process and allows a broad area to be inspected with a single view.

The gas leak detection devices use an infrared light source to spectroscopically probe the gas and a video camera to collect the light and produce an image. Because the scene is illuminated, the method does not require a gas-background temperature difference, as is needed for competing passive imaging approaches. Various solid-state infrared light sources and detection architectures have been developed, allowing both single-wavelength and differential imaging.

The gas imaging technology was used in a series of field tests conducted at petroleum refineries and natural gas processing facilities. The results of these tests were used by the petroleum industry to successfully petition the Environmental Protection Agency to allow gas imaging to be used as an alternative method for mandated leak detection operations. Thus, gas imaging is allowed as method that can be used by a petroleum processing facility (e.g. a refinery) to demonstrate regulatory compliance.
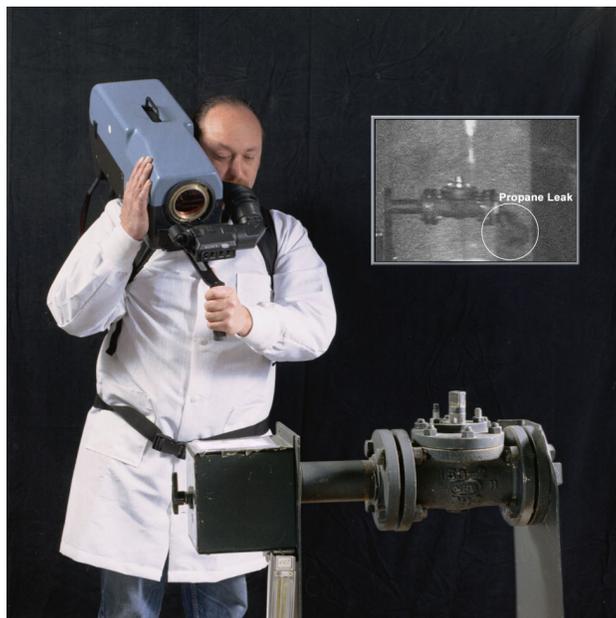
TECHNICAL BENEFITS

- Portable
- Capable of discriminating leaks from a safe distance
- Tunable over absorption band of many hydrocarbons
- Low power consumption–can run on batteries for extended periods

INDUSTRIES & APPLICATIONS

- Hazardous gas detection
- Natural gas & petroleum
- Transportation
- Public safety

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