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A publication of SENSIT Technologies

# DETECTION

## Professional



**Who's Gas Is It?**  
**SENSIT® IRED** Has the Answer

# SENSIT



**Gas Leak Detectors • Personal Protection**

**User-Friendly, Durable Instruments**

**Made In USA**



[www.gasleaksensors.com](http://www.gasleaksensors.com)

# President's Message



J. Scott Kleppe  
President and Chief Executive Officer

I am very excited to introduce the inaugural edition of Detection Professional. We will use this forum to share product news, case studies from the field, customer and employee profiles, product usage tips, and other information that we hope you'll find useful.

This first edition (sure to be a collector's item) features an article about our newest product, the SENSIT IRED. You'll also find a case study about an incident investigation and a Frequently Asked Questions segment list from our Service Department.

2015 has been a very busy year so far for Sensit Technologies. Representatives from gas utilities around the globe visited us at the World Gas Conference in Paris in June where we featured the Ultra-Trac APL, Sensit VMD, as well as our numerous ATEX approved products for sale in the European Union. In May, we were proud to unveil our leak truck featuring the SENSIT VMD at the American Gas Association Conference in Grapevine, Texas. Also at this conference, I presented a white paper that described our collaboration with the Gas Technology Institute to create the SENSIT IRED (infrared ethane detector) utilizing GTI's Infrared Absorption Spectroscopy technology.

We welcome your ideas to help create a well-balanced and useful publication. Feel free to forward your ideas, thoughts, and contributions to [marketing@gasleaksensors.com](mailto:marketing@gasleaksensors.com)

Best regards,

*J. Scott Kleppe*

J. Scott Kleppe  
President and Chief Executive Officer

## Feature Article

# Whose Gas is it?

When a utility worker or emergency responder is called to a house because of a gas smell, one of the things at the forefront of their mind is finding the source. Methane is the primary component in natural gas. When methane is present, it is critical to determine if it is naturally occurring (like sewer gas), or if it is from a natural gas pipeline. Without an immediate and accurate determination of the source, workers often shut down affected portions of the system while the gas is analysed – a costly proposition.

Until now, there hasn't been a portable, cost effective and accurate way of determining if a methane source is from a gas line or if it is naturally occurring. SENSIT Technologies recently introduced the revolutionary IRED® Infrared Ethane Detector.

### What is methane?

Methane is the primary constituent of natural gas. It is also the second most widespread potent greenhouse gas in the United States, behind carbon dioxide. Even though methane does not stay in the atmosphere as long as CO<sub>2</sub>, it is 120 times more potent than carbon dioxide.

### Where does methane come from?

While one of the primary sources of methane is fossil fuels like natural gas, other anthropogenic sources include landfills, sewer gas, waste, ruminants, rice cultivation, and burning biomass. There are also numerous naturally occurring sources such as wetlands, termites, oceans, geological sources, wild animals, and wildfires.

### The Problem:

Methane is combustible and presents a hazard to the environment and people. Oil and gas explorers, producers, and distributors strive to detect natural gas leaks. Recently, a utility company found a Class 1 gas reading during a gas leak survey, but they had no way of determining onsite if the methane was from their utility system. They collected a sample of the gas and sent it to a lab for analysis. Two days later they got their answer, but in the interim they were forced to monitor the



leak around-the-clock, which was very expensive. As it turned out, the gas was not theirs yet they shouldered the expense of monitoring it. Situations like these often occur. While leak detection technologies readily exist to detect methane, it has been a challenge for companies to offer detection equipment that is portable, cost-effective, and able to discriminate between pipeline natural gas versus other methane sources.



### **The Solution: Ethane as the Fingerprint**

Natural gas typically consists of approximately 80 - 95% methane (CH<sub>4</sub>) with the balance coming from other gases, including butane (C<sub>4</sub>H<sub>10</sub>), propane (C<sub>3</sub>H<sub>8</sub>) and ethane (C<sub>2</sub>H<sub>6</sub>). This combination and the percentage of each of these gases makes up a fingerprint that can determine if the methane's source is natural gas from a particular gas utility's system or from a natural gas production site or from biogas or sewer gas. Ethane is only present in natural gas. It is not present in methane produced as the result of organic decomposition (swamp gas, sewer gas, compost, etc.). The bottom line is that if ethane is present at all, the methane source is pipeline grade natural gas.

### **SENSIT Technologies' IRED Ethane Detector**

In a development project sponsored by the Gas Technology Institute and SENSIT Technologies, the leading manufacturer of gas leak detection equipment, the IRED Ethane Detector was recently released.

SENSIT's IRED detects and accurately measures only ethane allowing the user to quickly determine if the methane in the area is coming from the pipeline versus some other source. Accurate results are immediately available to the user, saving time and expense versus traditional methods of gas analysis. Additionally, because ethane concentrations can differ between gas distribution systems and, for example, production sites, the IRED can quickly and reliably identify the source.

The IRED uses a technology called infrared absorption spectroscopy to detect ethane in a sample of methane. It can detect as little as 250 parts per billion ethane in a sample as small as 50 parts per million methane. The fast results allow the user to make quick and accurate judgements to make the area safe and determine the actual source of the leak. IRED is portable (6 pounds), and features simple 3-button operation, a user-friendly interface, data recording, and a rechargeable Lithium ion Battery. The instrument comes with Bluetooth communication and is available with an optional GPS data recording and mapping feature.

## Case Study

# Incident Investigation

## Non-Standard Combustible Found Using SENSIT® GOLD G2

### The Client

A municipally owned gas utility system in North Carolina serving more than 30,000 residential customers.

### The Challenge

The gas utility needed to determine if an explosion and resulting fire at a residence within its jurisdiction was caused by a natural gas leak.

The explosion blew the garage doors off of the home and the gas line going to the water heater was on fire. The structure did not appear to have damage at the roof line, which is more typical of a natural gas explosion because of its lighter than air attribute.



### SENSIT Solution

Utility workers used the SENSIT Gold G2 to survey the area in and around the structure. The most significant readings were found around the garage foundation. The SENSIT display read “NSC,” the abbreviation for Non-Standard Combustible. This provided a critical piece of evidence to the investigation. The NSC reading told the utility worker that while there was a combustible gas present, it was likely a heavier hydrocarbon than natural gas.

### Results & Impact

The NSC reading alerted the utility workers to the possibility of another ignition source for the explosion and fire. Further investigation revealed an overturned can and a trail of gasoline, most likely tipped by the homeowner’s dog. The gasoline ran into the foundation area and the fumes eventually built to an explosive level. The SENSIT G2’s ability to the NSC reading helped the utility prove that natural gas was not the source of the explosion and fire, mitigating their liability and saving them untold costs.



## Frequently Asked Questions

# Service Department

Q: My instrument (SENSIT HXG-3P and SENSIT Gold Series including G2) displays, "LEL Fail." Has the sensor failed?

A: "LEL Fail" may indicate a failed sensor. However, "LEL Fail" often means that the sensor was removed and then incorrectly re-installed. Correct orientation of the tab is essential. See the picture for proper installation.



Q: My instrument (SENSIT G2, Gold CGI, Trak-It III, and Trak-It IIIa) displays NSC or NSR. What does this mean?

A: NSR or NSC are displayed when the instrument encounters a gas to which it is not calibrated. NSR (non-standard response) and NSC (non-standard combustible) readings may occur on the G2 and Trak-It IIIa instruments. The Gold CGI and Trak-It III are only capable of NSR readings.



If the G2 or Trak-It IIIa is set to Natural Gas, NSR indicates the presence of a non-combustible gas (such as CO<sub>2</sub> or pure nitrogen). If set to Propane, an NSR reading indicates the presence of a gas lighter than air that is most likely not combustible (such as helium).



If the G2 or Trak-It IIIa is set to Natural Gas, an NSC reading indicates the presence of a gas heavier than air (such as Propane or Gasoline). If set to Propane, NSC indicates the presence of a gas lighter than air like methane, hydrogen or natural gas. For Gold CGI's and the Trak-It III NSR

indicates a non-standard reading of a gas which may or may not be combustible.

Q: How do I calibrate my instrument?

A: Refer to the user manual included in the instrument's case for calibration instructions. Instructions are also available at [www.gasleaksensors.com/resources](http://www.gasleaksensors.com/resources). Additionally, our service technicians can provide support via telephone at 219-465-2700.

Q: My SENSIT Gold (CGI or G2) will not calibrate or display "Flow Block."

A: Check for cracks in the sensor cap and replace the cap if cracked or damaged. Also, ensure that the sensor cap is seated correctly in the gland with one O-ring. Replace O-ring if damaged. A spare sensor cap and O-rings are supplied with each instrument.

Q: My SENSIT Gold (CGI/G2) shows "O<sub>2</sub> fail." What does that mean?

A: If the instrument displays "O<sub>2</sub> fail" at the work display but not during auto-zero, an O<sub>2</sub> test needs to be performed. If the instrument displays "O<sub>2</sub> fail" at both auto-zero and at the work display, the sensor needs to be replaced.

Call the SENSIT service department before returning your instrument for repair, service, or calibration. Many issues can be resolved via telephone. If the instrument needs to be returned for service, our service techs will provide a form (via email, website or fax) that must be completed prior to return. The form requests specific information regarding the problem and complete contact information. Please return the instrument in the case provided to provide adequate protection during shipping.

SENSIT Technologies  
851 Transport Drive  
Valparaiso, IN 46383  
Attn: Service Dept.

# PERCENT GAS / PERCENT LEL CONVERSION CHART

## METHANE / NATURAL GAS

<b>% GAS</b>	0	.5	1	1.5	2	2.5	3	3.5	4	4.5	5
<b>% LEL</b>	0	10	20	30	40	50	60	70	80	90	100

## PROPANE

<b>% GAS</b>	0	.22	.44	.66	.88	1.1	1.32	1.54	1.76	1.98	2.2
<b>% LEL</b>	0	10	20	30	40	50	60	70	80	90	100



## 2015 Trade Show Dates

Aug. 3-6  
Appalachian Short Course  
Moon Township, PA

Aug. 12-14  
MEA Operations Conference  
Rochester, MN

Sept. 23-24  
CH4 Connections  
The Woodlands, TX