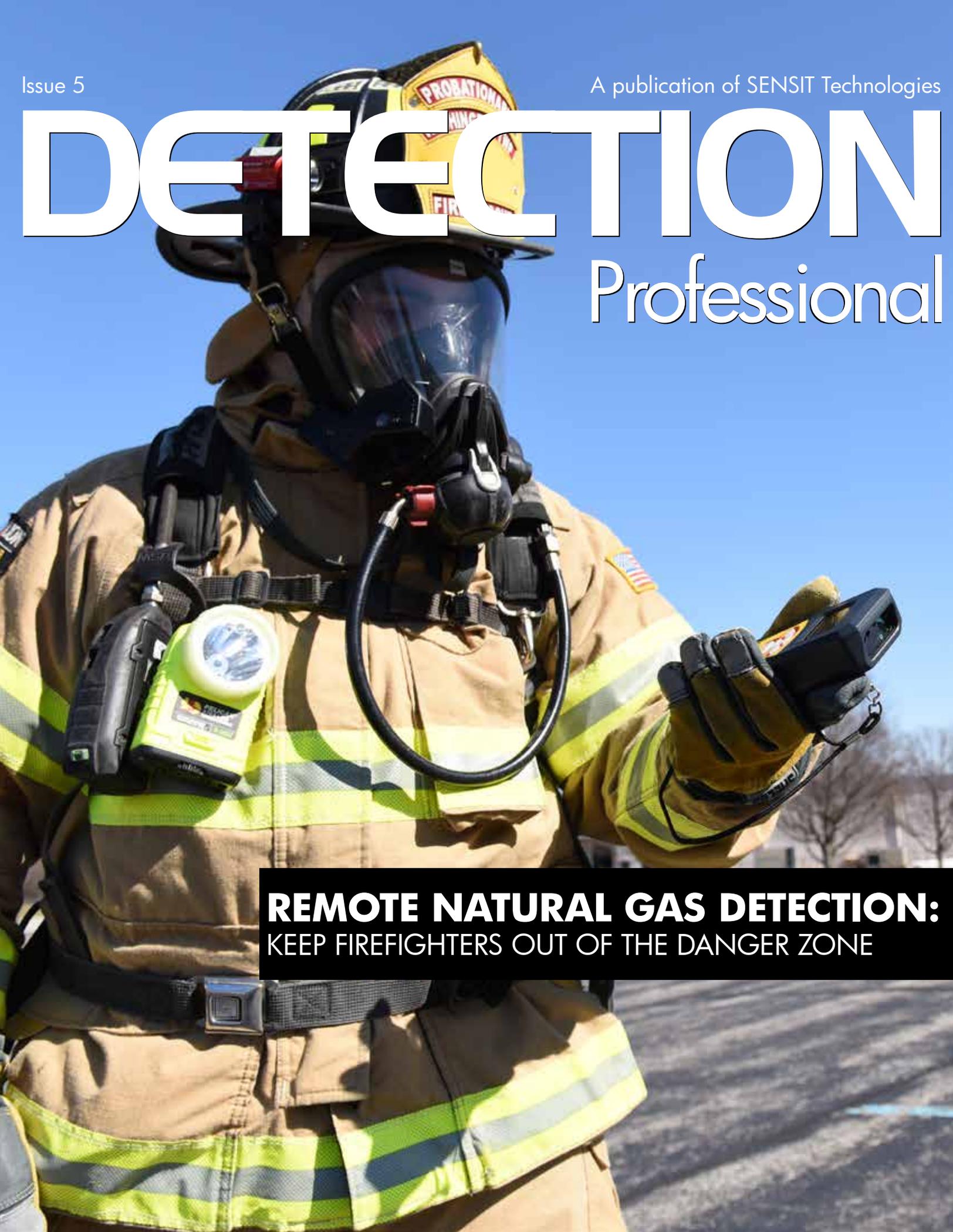


Issue 5

A publication of SENSIT Technologies

DETECTION

Professional



REMOTE NATURAL GAS DETECTION:
KEEP FIREFIGHTERS OUT OF THE DANGER ZONE



GAS•TRAC® LZ-30

Hand-Held Laser Remote Gas Leak Detector

This compact, hand-held detector uses laser technology to quickly and safely detect methane gas leaks at distances up to 100 feet.



Perfect for hard-to-reach areas, the LZ30 detects through most types of glass, keeping workers at a safe distance and out of the gas plume.

Visit our website to learn more and request a demonstration.



Innovative Detection Solutions
www.gasleaksensors.com



President's Message



J. Scott Kleppe
President and Chief Executive Officer

Greetings friends and customers.

We have been spending significant time working to improve the overall customer experience. This includes evaluating and applying improvements to our current suite of products, creating industry-changing product apps, and adding additional staff to serve you better. In a world full of automated systems, text messages, and emails we believe there is nothing like having a professional on the phone to assist you.

We are pleased to announce the opening of our European office in Northern Italy. SENSIT Technologies EMEA (Europe, Middle East and Africa) brings us closer to customers and distribution partners in the region to better support sales and product service. Equally important is the offering of new SENSIT products and technologies that will be introduced at the upcoming World Gas Conference in Washington D.C. in June.

The World Gas Conference is held every 3 years and is by far the largest conference in the natural gas industry. This conference travels around the world based on who is the Chairman of the International Gas Union. This year the Chairman is the President of GTI, David Carroll. This conference has not been in the US since 1985. The show itself is free of charge to visit. The SENSIT exhibit will be located in the center of what is referred to as "Showcase America". Stand 2507. We hope to see you there.

Finally, contained within this edition you will find information related to our newest product - the Gas-Trac LZ line of open path laser methane detectors. I am proud of our team for putting together this revolutionary kit that allows virtually anyone access to a product that will remotely detect natural gas leaks improving safety and efficiency. Compact, easy to use, and affordable.

Thank you again for your loyalty. We greatly appreciate your business.

Be safe,
Scott

REMOTE NATURAL GAS DETECTOR KEEPS FIREFIGHTERS OUT OF THE DANGER ZONE



Introduction:

Imagine this scenario: Your engine company is dispatched to respond to an odor of natural gas in a residential neighborhood. The fire truck stops at the nearest hydrant. The first-arriving officer sizes up the situation to make a preliminary decision on response strategy and determine if additional help is needed. In this case, the first due officer has very little to work with. Winds are light and variable, likely spreading the gas in multiple directions. No excavation projects are evident in the area.

Your firefighter turns on his 4-gas meter. Dispatch reports that local gas utility crews are on the way. However, they are at least 30 minutes away. You and your firefighter dismount and walk toward the address.

The caller says she has smelled gas outside for the past several hours but smells a slight odor in her basement as well. Initial size-up leans toward an underground gas pipe leak. You send your firefighter into the house with her. From the basement, he reports a reading on the 4-gas meter of 15% LEL (lower explosive limit). Standard procedures call for mandatory evacuation at 10% LEL so you direct her to leave the house.

The goal now is to determine if the leak is migrating to nearby homes. You and your firefighter move to the next closest building which is across the street. On the way, he takes a measurement at the storm and sanitary sewers. The readings are 10% LEL in the storm and 100% LEL in the sanitary. Since the maximum possible reading on his 4-gas meter is 100% LEL, the actual gas concentration is at least 100% LEL but could be much higher.

You direct him to pull the cover of the sanitary manhole to create a vent while you take the 4-gas meter toward the house across the street. You knock on the door and loudly announce yourself. You place your meter where the door meets the frame. The meter alarms and reads 100% LEL. You immediately recognize that this home could potentially explode and is just waiting for an ignition source. As you quickly retreat from the home, it explodes violently, knocking you to the ground, and covering you with debris.

Turnout gear is not rated for gas explosions, flying debris, glass, and other hazards launched in an explosion. Is there a better way to respond to natural gas emergencies? Does it make sense to risk a firefighter's life with an order to walk into the suspected gas plume to get a reading on his meter? There is no "plan B" if the gas lights up. A firefighter can't run fast enough.

The purpose of this article is to reveal a new (to the Fire Service Industry), yet well proven technology that can significantly increase the effectiveness and speed of size-up at a natural gas emergency. This technology provides huge safety benefits for first responders and the public.

What is TDLAS?

There is a technology now available that can reduce the time it takes to assess situations, increase firefighter safety, and on-scene effectiveness?

The name of the technology is tunable diode laser absorption spectroscopy or TDLAS and is used in SENSIT Technologies' new Gas-Trac LZ series of products. Laser technology using TDLAS can detect natural gas remotely from distances as much as 150 feet away. This means the firefighter does not need to start his investigation by carrying a traditional gas detector *into* the gas plume. TDLAS has been widely used in the natural gas industry for many years to supplement required leak surveys on distribution and service pipelines. SENSIT Technologies' Gas-Trac LZ products are potentially great new tools for firefighters and gas utilities alike.

The science behind TDLAS technology



TDLAS uses a laser that is tuned specifically to detect methane, the major component of natural gas. The laser beam emits a specific wavelength which is absorbed by methane. When the laser's path crosses methane molecules, some laser energy is absorbed. The detector analyzes the difference between the laser light energy that was sent to what was reflected to the sensor. The result is displayed in ppm-m (parts per million meter).

The laser starts out as a point and grows to a cone shaped beam as it approaches the target, kind of like an LED flashlight. In this case, the detector is a specialized flashlight that reveals the presence of natural gas and other gases containing methane such as sewer and landfill gas.

Three conditions are necessary for the TDLAS remote methane detector to sense natural gas.

1. The gas plume needs to be within the detection range of the detector. SENSIT's Gas-Trac LZ30 has a range of up to 100 feet. The Gas-Trac LZ50 has an industry-leading range of up to 150 feet.
2. The laser requires a background that will reflect the beam. Ground cover, buildings, trees, and other structures usually provide an adequate reflective surface.
3. The beam from the laser must pass through some portion of the plume.



SENSIT's Gas-Trac LZ30 uses TDLAS technology to detect methane gas from as much as 100' away from the target.

One of the best features of the technology is its ability to "see" through glass and detect methane inside a building *-without entering it first*. Firefighters can also use the detector to see where gas is escaping and then follow up the investigation with a combustible gas indicator to determine the exact location and levels of gas.

Advantages of Remote Methane Detection

SENSIT's Gas-Trac LZ30 provides the ability to remotely sense natural gas, minimizing the time firefighters must spend in the danger zone. The laser quickly identifies locations of gas plumes from as much as 100' away, without putting the firefighter in a hazardous situation.

The most useful application of the LZ30 will be to improve the speed of size-up during natural gas emergencies. In the example sited earlier in this article, if the first in officer was equipped with an LZ-30, he could scan the road surface and lawn near the residence, possibly identifying leaking gas escaping the soil. He could scan through windows to determine if there are large concentrations inside of homes in the area. He could quickly check nearby residential gas meters on homes in the area. Checking manholes and other underground access points would also be faster. Using the Gas-Trac LZ30, the officer would therefore be able to more quickly address the life

Continued on next page



hazard and order evacuations.

This technology also allows first-due firefighters to quickly identify and then concentrate their effort on those civilians in the most potential danger. Although the remote methane detector does not provide a reading like a traditional combustible gas indicator, the ppm-m reading does reveal the relative concentration of gas in one area versus another.

In just a few seconds, the firefighter can scan one side of the suspect area, then walk a few steps and scan adjacent areas to determine if gas has migrated. A large area can be covered in a relatively short period of time. The Gas-Trac LZ instruments are used much like a flashlight in the dark, except that they reveal where methane is versus where it is not. Once this is determined, teams can safely continue their size-up using traditional CGIs.

In our earlier scenario, gas accumulated in the house, undetected, and collected enough to reach explosive levels. Though the house was unoccupied, eventually the thermostat called for heat, providing an ignition source that triggered the explosion.

“The locked building scenario”

The “locked building” scenario is a common problem for firefighters and utilities alike. Often the utility will ask firefighters to force their way into a building that is suspected to contain

levels of gas. Without using a product like the Gas-Trac LZ30, there is no completely safe way to do this.

The Gas-Trac LZ remote methane detectors can look through glass and identify the presence of natural gas. Compared to current methods, it is a huge leap forward in firefighter and public safety to be able to determine the presence or absence of gas during the initial size-up from outside the house.

The Gas-Trac LZ instruments provide a quantitative reading in ppm-m (parts per million meter). This is equal to the gas concentration multiplied by the length of the beam within the gas plume. So, if the laser is targeted at a wall 30 meters away and it encounters a plume with a concentration of 10ppm across the entire length, the reading will be 300ppm-m (30 meters x 10 ppm). On the other hand, if the plumb is 10 meters wide with a concentration of 30ppm in the beam, the reading will also be 300ppm-m.

Generally, in the case of remote laser detectors, the actual ppm-m reading is less important than the basic determination of “is there gas present or not” and “is there more gas here or there?” In general, remote methane detectors are not intended to be quantitative tools like a CGI. If, after a thorough search using the Gas-Trac LZ, there is no reading, then the decision becomes how to deploy manpower and instruments to determine and minimize life and property hazards.

The Gas-Trac LZ30 has a range of up to 100’. With traditional CGIs and 4-gas meters, the firefighter must enter the gas plume to get a reading and then determine the next steps. The remote laser detector allows the firefighter to make better and faster decisions from outside the potential danger zone, increasing fire department effectiveness and improving public safety.

About the Author



Jerry Knapp is a training officer at the Rockland County Fire Training Center in Pomona, NY and is a 40 year veteran firefighter/EMT with the West Haverstraw, NY Fire Department. He has an AAS in Fire Science, is the Chief of the Rockland HAZMAT team, is a former Paramedic, and was the Plans and Operations specialist for the Directorate of Emergency Services at the US Military Academy at West Point. He is a frequent contributor to Fire Engineering Magazine and presenter at the annual FDIC Conference.

Contact Info:
 Jerry Knapp
 Phone: 845-558-0489
 Email: jknapp23@aol.com

NEW: Calibration Service



SENSIT Technologies offers comprehensive gas detection instrument calibration and repair services. Rapid turnaround and quality workmanship are the hallmark of the SENSIT service department. Our technicians have broad experience on product design, engineering, and application. This expertise means we get it right the first time, providing SENSIT customers with outstanding technical support.

Standard Calibration Service - \$90

Standard Calibration includes a 12-point check of the instrument:

1. Verify serial number, customer information, purchase date and warranty status
2. Check batteries. Replace if necessary (extra charge applies)
3. Check operation and function of display
4. Verify proper operation of function buttons
5. Inspect housings for damage and gasket integrity
6. Check for dirty or cracked sensor cap or filter
7. Inspect gooseneck assembly for wear
8. Check for proper pump operation and that vacuum system is sealed
9. Check for any logged error messages (for SENSIT Gold G2)
10. Check age and output of sensors
 - a. Replace O2 sensor if >2 years old (extra charge applies)
 - b. Replace electrochemical sensors >5 years old (extra charge applies)
11. Verify date and time; reset if necessary
12. Calibrate instrument on applicable gas(es)

P100 Personal Monitor Calibration

- P100 HCN, SO₂, and NO₂ - \$85
- P100 CO, O₂, H₂S - \$55

Note that SENSIT ISO Standards require us to adjust and repair instruments that are out of specification. If additional repairs are required, customers using any of SENSIT's Calibration Services will be charged for parts only (labor charge waived). No charge for software updates.

Level One Calibration Certification + \$40

In addition to the Standard Calibration checks and adjustments, the Level One Calibration Certificate logs the type of unit, serial number, gas concentration, and lot number of gas used. The unit also gets a calibration sticker.

Level Two Calibration Certification + \$90

In addition to the Standard Calibration checks and adjustments and the Level One information, the Level Two Calibration Certificate logs sensor data before and after calibration.



For more information go to:
www.gasleaksensors.com



WE'RE EXHIBITING | STAND NO 2507 | WGC2018.COM

WGC 2018 - THE LARGEST & MOST SIGNIFICANT GLOBAL GAS EXHIBITION EVER HELD



**27th WORLD GAS
CONFERENCE** | **JUNE 25-29**
WASHINGTON DC | **2018**



JUNE 25-29, 2018 | WASHINGTON DC, USA



851 Transport Drive
Valparaiso, IN 46383-8432

Phone: 888 473 6748
219 465 2700
Fax: 219 465 2701

Email: info@gasleaksensors.com
Web: www.gasleaksensors.com