NATURAL GAS LEAK PINPOINTING

How to minimize bar holing

Operating procedures and regulations around the world require bar hole drilling to be performed each time a suspected natural gas leak is detected, in order to pinpoint and classify it. However, unnecessary holes can be avoided, or at least reduced, by using the right equipment. By efficiently minimizing bar holing, time and cost for drilling and repair of paved roads can be kept to minimum.

Application

Gas distribution companies inspect their gas network at regular intervals to make sure it is tight and safe. They also carry out emergency checks if natural gas odours is smelled. The typical procedure consists of a leak search followed by pinpointing, in order to narrow down the area for repair and determine the location of the leak. This document describes how IRwin® Methane Leak Detector from INFICON minimizes the time needed to pinpoint the highest gas concentration.

Traditional method

One of the characteristics of natural gas is that, in the event of a leak, it will try to find its way out of the ground. This means that the gas concentration decreases as you move away from the leak. For this reason, a traditional method for checking where to dig for repair is drilling a number of bar holes in a row and compare their concentration readings. Most regulations require the leak to be located using a bar hole probe. The probe is typically made of a tube with a plugged end and a number of sampling holes on the side. Inserted into a drilled or plunged bar hole, it takes measurements to determine the gas concentration. The bar hole with the highest reading is usually the one closest to the source of the leak. A number of additional bar holes is typically made perpendicular to the hole with highest concentration, in order to get a more precise, two-dimensional location indication. Unnecessary bar holes add however work and cost to the survey. Depending

Bar holing is a method of measuring gas concentrations on a defined depth below the ground surface, in order to determine the location of the leak.

How to keep bar holes to minimum

IRwin methane leak detector offers the advantage of keeping the number of bar holes to an absolute minimum. This saves time, work and money.

Create Vacuum
Press the bell probe to the ground to create a vacuum and draw the gas straight through the surface

Wait a few seconds
Allow 5-10 seconds for vacuum to act on gas trapped beneath the top ground surface

Measure
Repeat and compare readings. IRwin recovers fast and a couple of square meters can be searched within minutes

on external conditions (rain, direct sun etc.) holes are sometimes difficult to make. Temporary road closures may be necessary depending on the location of the pipe.

The solution from INFICON

With IRwin Methane Leak Detector and its innovative bell probe system, the number of bar holes can be significantly reduced. By employing the built-in pump, in combination with the probe, a vacuum is created. This vacuum allows operators to draw higher concentrations directly through most ground surfaces, eliminating the need for drilling numerous bar holes. The typical procedure includes the following steps:

- making a general survey of the area where the leak is suspected by using any of the probes included in IRwin's modular probe system. This first search will indicate some areas with slightly higher ppm readings. (This step is where bar hole drilling can be avoided)
- changing to the bell probe (this is done in a few seconds thanks to the quick install fittings) and pressing the bell against the ground. For best adherence, place one foot on each side of the bell
- maintaining pressure on the bell for 5 to 10 seconds. The instrument may give a blocked flow alarm, which is normal. If gas is present beneath the surface, the concentration on the screen will begin to rise
- waiting until the concentration saturates on the screen. It's quite common to extract volume percent samples directly through asphalt and concrete tiles as well
- identifying the position with the highest reading. This is where the traditional bar holing should be initiated

Benefits of pinpointing leaks with IRwin

Cutting costs and unnecessary work is a major driver for all businesses, including gas leak detection. Each bar hole that can be avoided means less work, minimized public disruption, and cost savings. The main benefits of pinpointing leaks with help of IRwin are:

- Drill fewer bar holes by narrowing down the bar hole area to within 1-2 meters
- Elimination of unnecessary "zero reading" bar holes
- Quicker inspection of large areas
- Reduction of on-site work in unfavourable conditions, such as inclement weather or heavy traffic
- Potential halving of the number of bar holes required if the standard operating procedure permits

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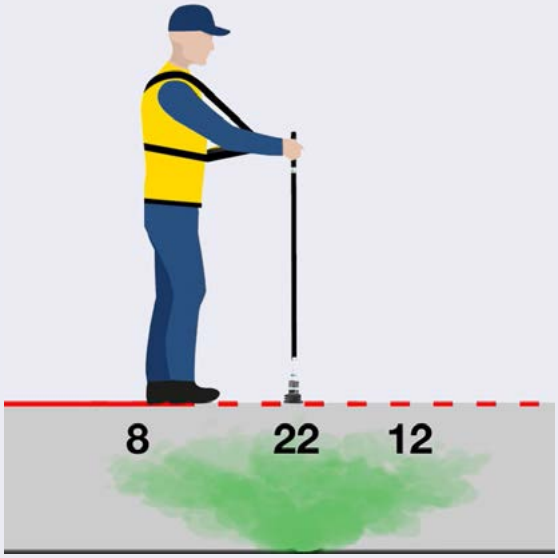

Press the bell probe against the ground and draw samples. The highest measured concentrations indicates where the traditional bar holing should be initiated.

Tips!

Drawing vacuum with help of the bell probe is easy. Simply stay with one foot on each side of the suction cup to make the bell probe adhere to the surface much better. The smoother the surface, such as paved pedestrian zones, the better it works. Volume percent levels or even tens of percent are quite common.

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