



FREQUENTLY ASKED QUESTIONS ABOUT OPEN PATH GAS DETECTION

Q. What are LEL. Metres (LEL.m)?

Point type gas detectors measure the average gas concentration inside their detection chamber only. Their output has nothing to do with the gas concentration even 0.5m from the detector. Point detectors measure in terms of %LEL of the gas in question.

Open Path Gas Detectors (OPGD) measure the total gas concentration over many meters along the imaginary "operating path" between the source (transmitter) and the detector (receiver). Therefore, their sensitivity or operating range is also a function of the distance between the source and the detector and the size of the gas cloud in the path. The reading of an OPGD is analogous to the sum of readings of many point detectors, spaced one meter apart, each of them capable of reading the average gas concentration along one meter.

Usually, a gas cloud has a higher gas concentration closer to the source of the leak - the further from the source, the lower the gas concentration.

The Open Path Gas Detection system does not distinguish between a higher concentration over a small part of the path and a lower concentration over a larger part of the path. However, it provides complete coverage over the entire path length and it is unlikely that more than one leakage source will exist at any one point in time.

As mentioned earlier, the sensitivity of point detectors is specified in terms of %LEL. Therefore, the sensitivity of OPGD has to be specified in terms of %LEL x meters or LEL.m

Here $100\%LEL = 1 LEL$, therefore $100\%LEL$ over 1 meter = 1 LEL.m

Since OPGDs are designed to monitor large areas, their sensitivity scale is based on a 5 meter wide cloud. This means that if a gas cloud of 5 meters wide enters the path and its average concentration is 100% LEL, then the amount of gas measured by the OPGD is: $5 \text{ (meters)} \times 100\% LEL = 5 LEL \times \text{meter} = 5 LEL.m$.

The general equation will be: SafEye output = gas cloud width in path x average concentration

From the above equation, it can be seen that the output of the OPGD will be the same for

100% LEL over 1 meter
50% LEL over 2 meters
25% LEL over 4 meters
10% LEL over 10 meters

With the LEL.m measurement, the alarms must be set differently. Many users set the traditional point type combustible gas detectors to 20 and 60% LEL. This would be equivalent to 1.0 LEL.m (20% LEL over 5 meters) and 3.0 LEL.m (60% LEL over 5 meters). Your set points may vary subject to the particular gases and conditions on your site.

Q. What about cabling/wiring to Open Path Infrared detectors?

The source unit only requires a two-core cable/wire as only 24VDC is required. For the detector, the number of conductors will depend on the design of the system. It requires power and signal cables back to the control system. There are various configurations available - consult us or the operating manual.

Q. Will SafEye tell me where the gas leak is along the detection path?

No. SafEye tells you that there is a gas hazard somewhere between the source and detector. The probability is that it will be only one gas cloud from a leakage point.

Q. How do you calibrate?

SafEye is calibrated at the factory. On site, the unit does not need to be recalibrated -
- no need for gas mixtures or cylinders in the field. You simply use a special plastic filter to check the proper function of the unit. This is typical of all open path gas detectors.

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