

3. The Advantages and Disadvantages of Gas Detection with a Laser.

Advantages:

- Because of the very narrow 0.3 nm line width of the laser emission, there is no interference from other gases.
- Response times are in the order 1 second. This allow for fine resolution/control when making process measurements.
- The intense laser light concentrated at the absorption wavelength enables path lengths up to 1 km to be measured.
- An average measurement is taken over the total path so that a narrow plume of gas has less chance of escaping detection.
- The range of measurement can be up to 4 orders of magnitude, enabling concentrations of 0.1 ppm to 1000 ppm to be measured.
- Because of the internal reference cell, the system is self calibrating.
- There is no 'poisoning' or degradation of the instrument with long term exposure to a gas.
- Can easily be conformed to be 'Intrinsically Safe'.
- Low maintenance and low operating costs.
- Reliable technology.

Disadvantages:

- Only one gas can be measured with each instrument.
- When heavy dust, steam or fog blocks the laser beam, the system will not be able to take measurements. This is also the case when a person or vehicle blocks the path.