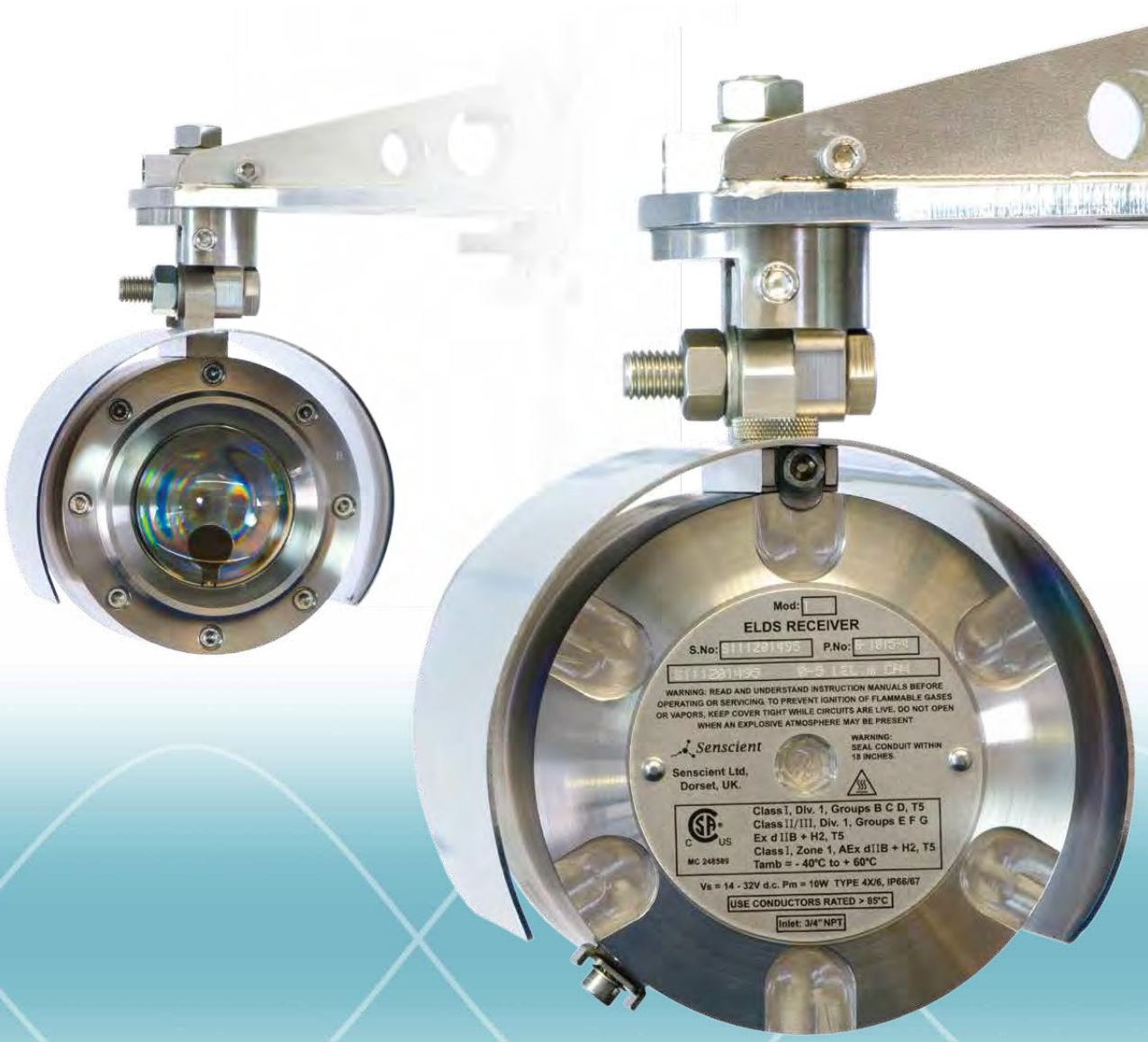
Senscient

Open Path Gas Detection
Where Lasers Make The Difference



Senscient ELDS™ Toxic & Flammable Gas Detection Product Guide

The New Benchmark in Industrial Gas Detection

Increasingly, operators of high risk facilities in the oil and gas, petrochemical, chemical, metals and waste water treatment industries are demanding better performance, cost reduction and yet higher plant safety from the use of gas detection - Senscient's range of open path detectors are designed to meet these challenges head on by providing:

- Greater area coverage with less devices
- Faster speed of response plus higher sensitivity
- Best availability in adverse weather conditions
- No false alarms from interference gases
- No manual intervention during routine testing
- No consumable sensing elements

Senscient's innovative product designs deliver superior performance while reducing capital and operating expenditure.

More importantly, Senscient's solutions remove personnel from the area of risk. Consequently, Operators, System Integrators and Engineering Contractors are turning to Senscient for a best practice solution.

Senscient the new benchmark in industrial gas detection.

Senscient

Founded in 2004 by Mr Lee Richman, who has over 20 years of gas detector industry experience, Senscient is an ISO 9001 registered company that employs the world's most experienced team of highly qualified engineers to design fit for purpose industrial gas detectors.

Utilising laser technology, called ELDS™ (Enhanced Laser Diode Spectroscopy) and combined with SimuGas™ the patented daily auto testing technique plus HARMONIC FINGERPRINT signal processing, the Senscient ELDS™ product range is unrivalled in delivering robust reliable gas detection.

Senscient's team has more than 150 years collective experience in gas detection.

Detection Technology

Factors to be considered when selecting the most appropriate detection technology include: the chemical properties of the target gas, the presence of any interference gases, local environmental conditions and the layout of the area. Detection technology options include: optical, electrochemical, electro catalytic and metal oxide.

Poor technology selection will result in the failure to detect a gas release, poor operational performance, false alarms, plus high on-going operational and consumable costs, or total replacement.

Senscient ELDS™ products use the latest optical laser based detection technology.

Fixed Gas Detection

Gas detectors are available as personal / portable devices or as permanently fixed installations. Fixed installations provide continuous monitoring of an area and can initiate local alarms or plant shutdown.

Fixed gas detectors are either 'Fixed point', where detection is at a single location or 'Open Path' with detection over a distance providing a greater area of coverage and being less prone to the influence of changing air movements.

Senscient designs and manufactures market leading fixed open path gas detection.

Fixed Point Vs Open Path Gas Detection (OPGD)

Fixed point devices are typically mounted at locations in close proximity to industrial plant where there is a significant risk of a gas escape or in a confined area where gas may accumulate.

The effectiveness of any fixed point device is totally dependent upon the gas actually reaching the detector in sufficient concentration, and remaining there for sufficient time, for the technology to respond.

Knowledge of local air movement and gas flow is absolutely essential and several point devices are often used to try to compensate for the design uncertainty, which significantly increases the cost of installation and routine maintenance.

Open path or 'Line of Sight' (LoS) devices monitor along an open path covering tens of metres making them less susceptible to changes in wind direction and providing a far greater area of coverage. Open path devices are also able to detect large gas clouds of low concentration which often go undetected by fixed point devices.

Typically open path gas detectors are used to monitor along piping racks, pump rows, around storage or process areas, across the inlet or exhaust of ventilation systems, or any open area where there is a possible gas hazard.

Senscient specialises in the design and manufacture of open path gas detection.

Senscient Open Path Gas Detection

Traditional open path gas detection (using flash lamps) are limited to the general detection of flammable gases and will respond varyingly to other hydrocarbon gases, in addition to the calibrated target gas.

Poor performance in adverse weather conditions plus the need for manual intervention during routine testing are also limiting factors.

Senscient ELDS™ range of toxic and flammable gas detectors use the latest laser detection technology plus patented software routines to deliver the best performing open path device in terms of sensitivity, specificity, speed of response, uptime availability with no consumable parts or any need for routine manual testing.

Patented 'HARMONIC FINGERPRINT' signal processing eliminates spurious alarms from interference gases and the patented daily auto testing technique called 'SimuGas™' removes the need for personnel to enter the hazardous area for routine testing.

Senscient ELDS™ devices eliminate false alarms and require no routine testing.

Specifying Senscient ELDS™

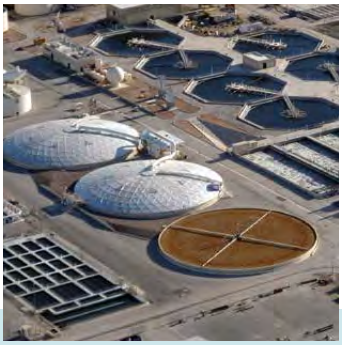
When engineering an open path gas detection solution, specify:

- The name of the gas to be detected
- Desired detection range in ppm.m or LEL.m
- Desired alarm thresholds
- Monitoring path length in metres
- Environmental conditions
- Hazardous area certification
  e.g. ATEX CSA , UL or other

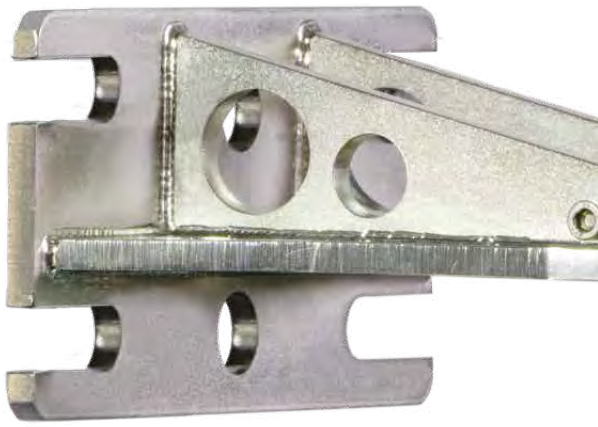
When specifying Senscient ELDS™ devices include the following terms:

- Senscient ELDS™
  Laser based open path gas detection
- 'SimuGas™'
  Daily auto gas testing
- 'HARMONIC FINGERPRINT™'
  False alarm rejection technology
- Bluetooth wireless connectivity

Senscient can provide open path gas detection and project design assistance.



Open Area Detection



Open Area Detection

Senscient ELDS™ are capable of detecting toxic, flammable and combined gas releases over distances of 5 -200m (gas dependant), providing a detection barrier adjacent to or around industrial plants or processes.

Configuration

Each system comprises of a separately mounted transmitter (Tx) sending an eye safe laser signal to a receiver (Rx).

Operation

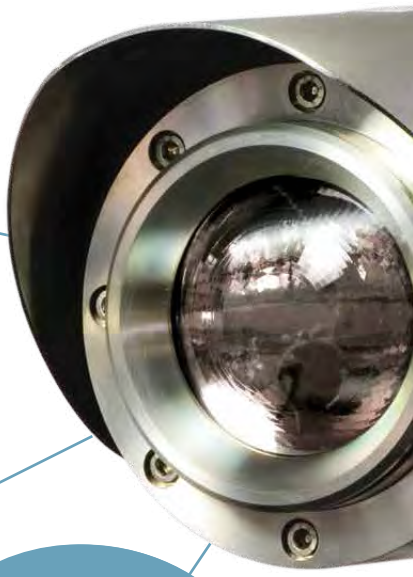
Any target gas in the beam will modify the laser signal which generates a unique 'HARMONIC FINGERPRINT' whose amplitude correlates to the gas concentration. Best in class, fast alarm notification for flammable gases in <3 seconds and toxic gases in <5 seconds.

Mounting

A clear line of sight plus rigid mounting are essential for reliable performance. All systems are supplied with alignment / fixing brackets.

No False Alarms

Uses Patented 'HARMONIC FINGERPRINT' gas recognition technology to eliminate false alarms from interference gases.



Highest Availability in Adverse Weather

Best availability in rain and fog. Uses NIR detection technology with low water vapour absorption.

Reduces High Level Working

Removes any need for ladders or scaffolding. Uses Bluetooth connectivity for interrogation.

Removes Personnel from Risk Area

No manual intervention required for routine testing. Uses patented 'SimuGas™' daily auto gas testing.

Significant Opex Savings

Has no consumable sensing elements or any need for routine test gases.

Significant Capex Savings

Wide area coverage reduces the need and installation costs of fixed point devices.

Detectable Gases

Ammonia, Carbon Dioxide, Hydrogen Chloride, Hydrogen Fluoride, Hydrogen Sulphide, Methane and Ethylene.

Toxic Gas Measurements

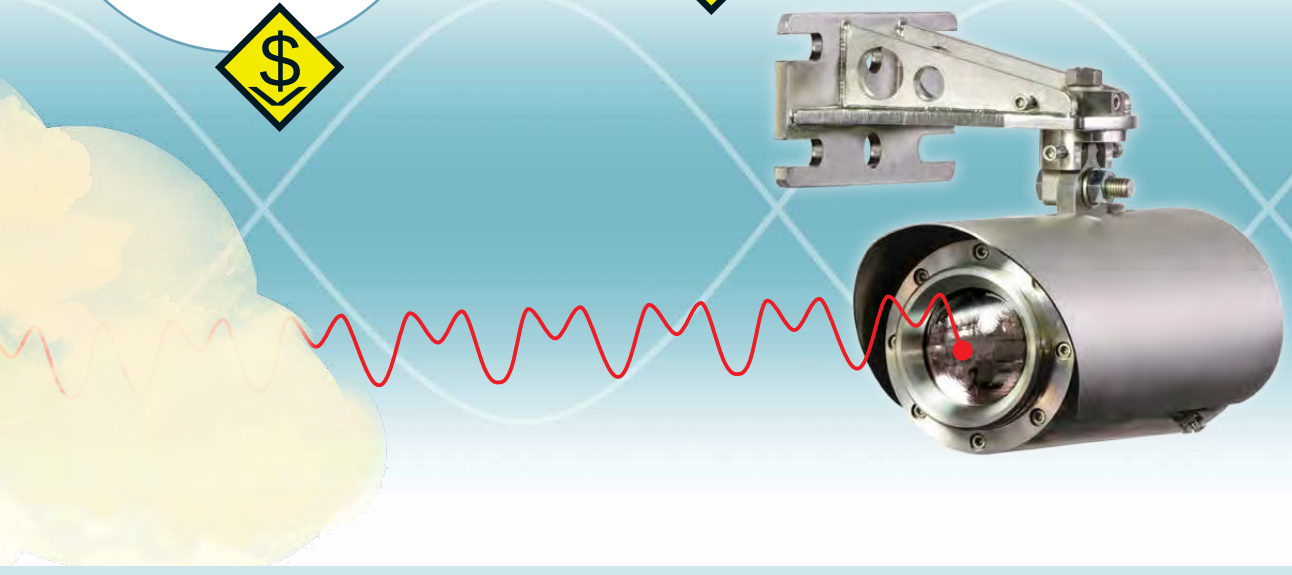
Fixed point toxic gas detectors measure gas concentration in parts per million (ppm). Open path devices measure in ppm over distance in metres (ppm.m) e.g. A 5 metre gas cloud with a concentration of 15ppm will read 75ppm.m (15 ppm x 5m) on an open path device.

Flammable Gas Measurements

Fixed point flammable gas detectors measure concentrations in percent of the Lower Explosive or Flammable Level (%LFL). Open path devices measure in LFL over distance in metres (LFL.m) e.g. A 5 metre gas cloud with a concentration of 50% LFL will read 2.5 LFL.m (50% LFL x 5m) on an open path device.

Routine Testing

Senscient ELDS™ devices all use 'SimuGas™' daily auto gas testing, removing the need for test filters or test gases, and reducing operator exposure to risk.



Ventilation Duct Detection

Duct Detection

Senscient ELDS™ ventilation duct detectors are capable of detecting flammable gases over distances of 0.5 to 5m (XD & VZ versions). For toxic gases regular open area detection devices are used which can operate down to a 5m path length.

Configurations

Each system comprises of a separately mounted transmitter (Tx) sending an eye safe laser signal to a receiver (Rx).

Operation

The laser signal is modified in the presence of the target gas generating a unique 'HARMONIC FINGERPRINT™' whose amplitude correlates to the gas concentration. Best in class, fast ventilation shutdown for flammable gases in <1 second and for toxic gases in <5 seconds.

Mounting

Flammable gas devices can be mounted onto the side walls of ventilation ducting (XD version) or mounted in front of an intake or exhaust (VZ) version. Toxic devices are identical to standard open path devices.

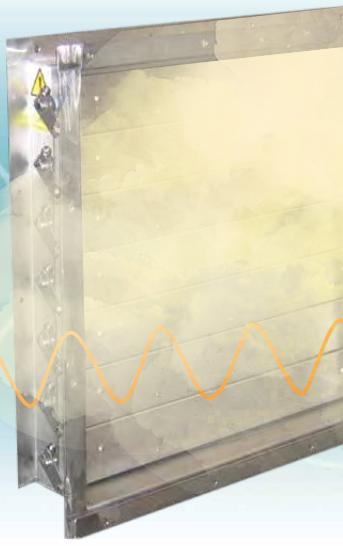
Faster Shutdown

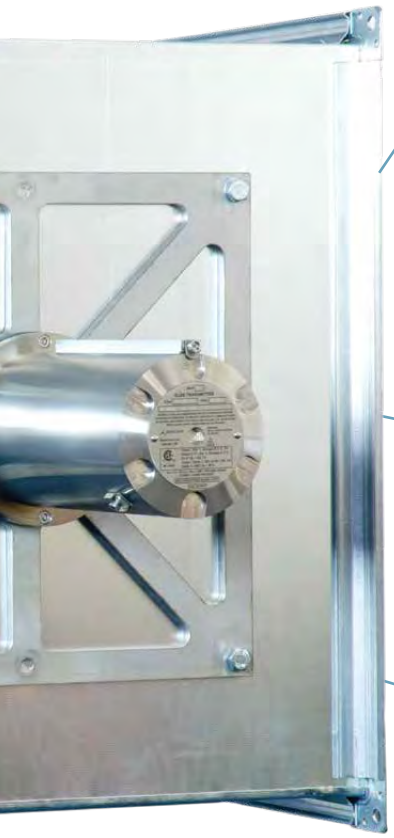
Highest asset safety with genuine <1 second response time plus higher sensitivity than conventional IR devices.

Cross Duct (XD

Reliable Operation Under Vibration

Duct vibration and flexing tolerant with wide cone of detection.





No False Alarms

Uses Patented 'HARMONIC FINGERPRINT' gas recognition technology to eliminate false alarms from interference gases.

Significant CAPEX Savings

Wide area coverage reduces the need and installation costs of fixed point devices.

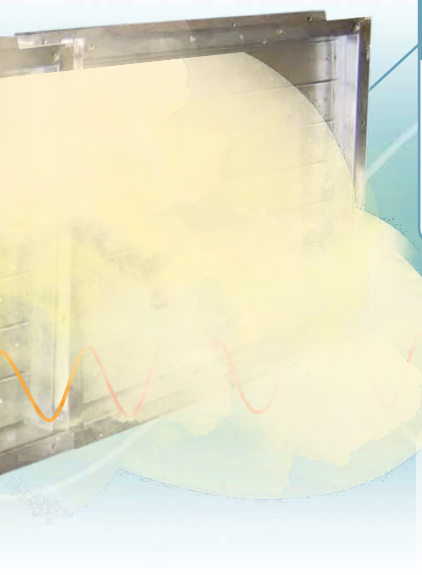
Significant OPEX Savings

Has no consumable sensing elements or any need for routine test gases.

) Version)

Highest Availability in Adverse Weather

Best availability in rain and fog. Uses NIR detection technology with low water vapour absorption.



Ventilation Zone (VZ Version)

(OPGD Version)

Detectable Gases

Ammonia, Carbon Dioxide, Hydrogen Chloride, Hydrogen Fluoride, Hydrogen Sulphide, Methane and Ethylene.

Toxic Gas Measurements

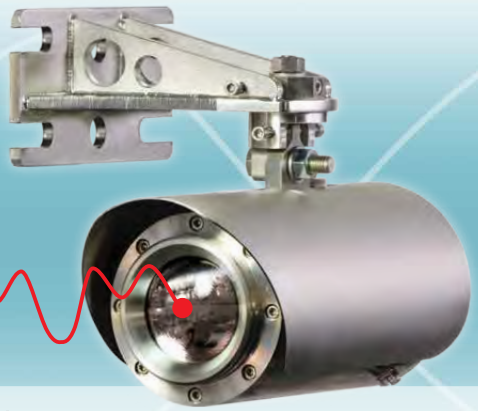
Fixed point toxic gas detectors measure gas concentration in parts per million (ppm). Open path devices measure in ppm over distance in metres (ppm.m) e.g. A 5 metre gas cloud with a concentration of 10ppm will read 50ppm.m (10 ppm x 5m) on an open path device.

Flammable Gas Measurements

Fixed point flammable gas point detectors and open path devices measure concentrations in percent of the Lower Explosive or Flammable Level (%LFL) for duct mounted applications. With Senscient XD & VZ devices alarm thresholds down to 2% LFL are reliably achieved.

Routine Testing

Senscient ELDS™ devices all use 'SimuGas™' daily auto gas testing, removing the need for test filters or test gases, and reducing operator exposure to risk.



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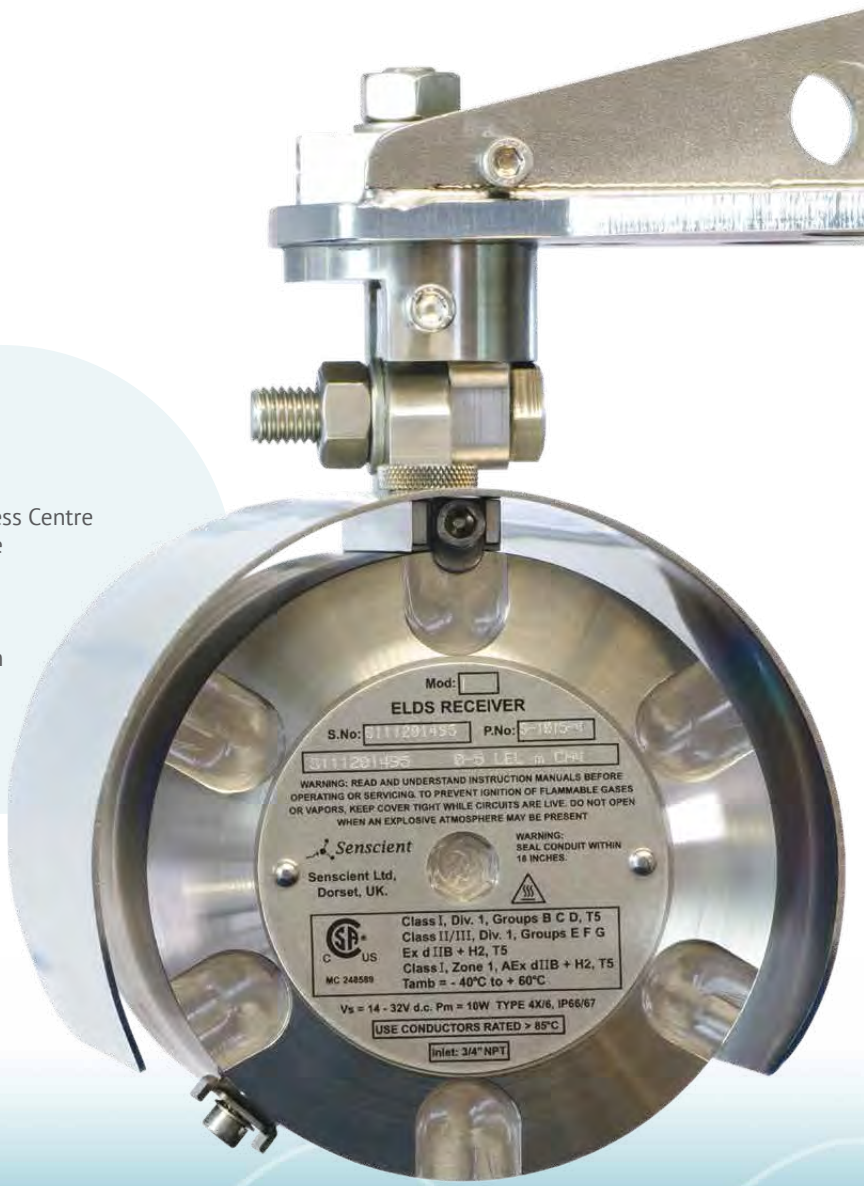

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The New Bench Mark in Industrial Open Path Gas Detection.

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