



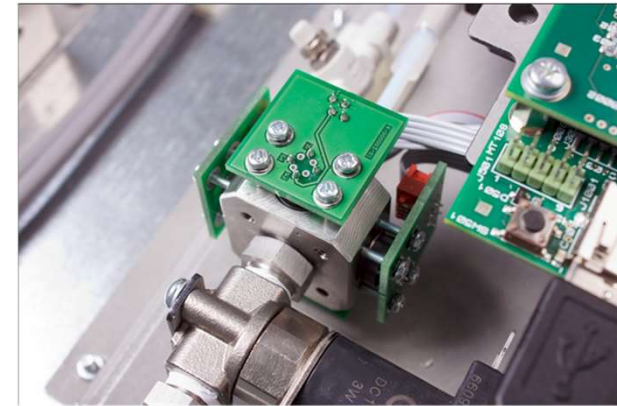
Industrial Effluent Monitor

*Reliable and
Effective*



Introduction

- Manufacturer of water and gas quality monitoring equipment
- Established in 2006 in Manchester, UK
- Close links to the University of Manchester
- “e-Nose” gas sensor technology is the use of electronic sensors to detect substances in air and water



History

- 2000 – Founded by Professor Krishna Persaud (CSO)
- 2006 – Spin-off from Manchester University
- 2010 – Private investor and team of engineers & scientists joined
- 2011 – New Oil in Water and THM analysers
- 2013 – ATEX Zone 2 products
- 2018 – Ammonia Analyser for wastewater
- 2019 – Touchscreen versions
- 2020 – VOC Gas and Industrial Effluent Analysers

Product Portfolio

MS1200: VOC / Oil in Water / Hydrocarbon Monitor

MS1800: VOC Gas Analyser

MS1900: Industrial Effluent Monitor

MS2000: THM Analyser

MS3500: Ammonia monitor for raw wastewater

ON-LINE

NO
REAGENTS

ROBUST



Benefits of e-nose technology

Non-contact

- No probes to corrode and foul
- No membranes to block

No water pumps to replace and check

No reagents

No chemical waste disposal

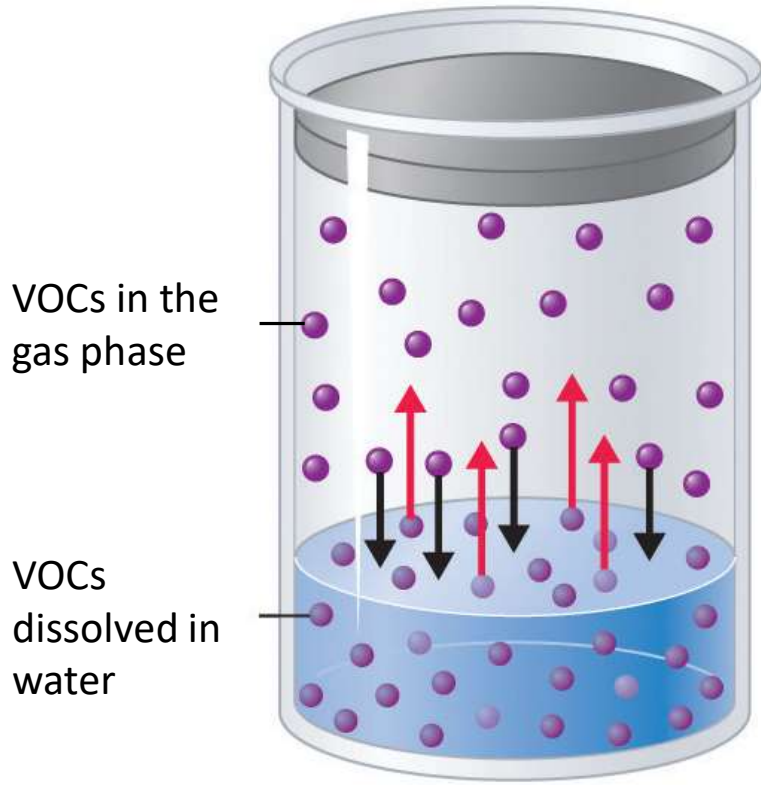
No gas bottles

No fuss

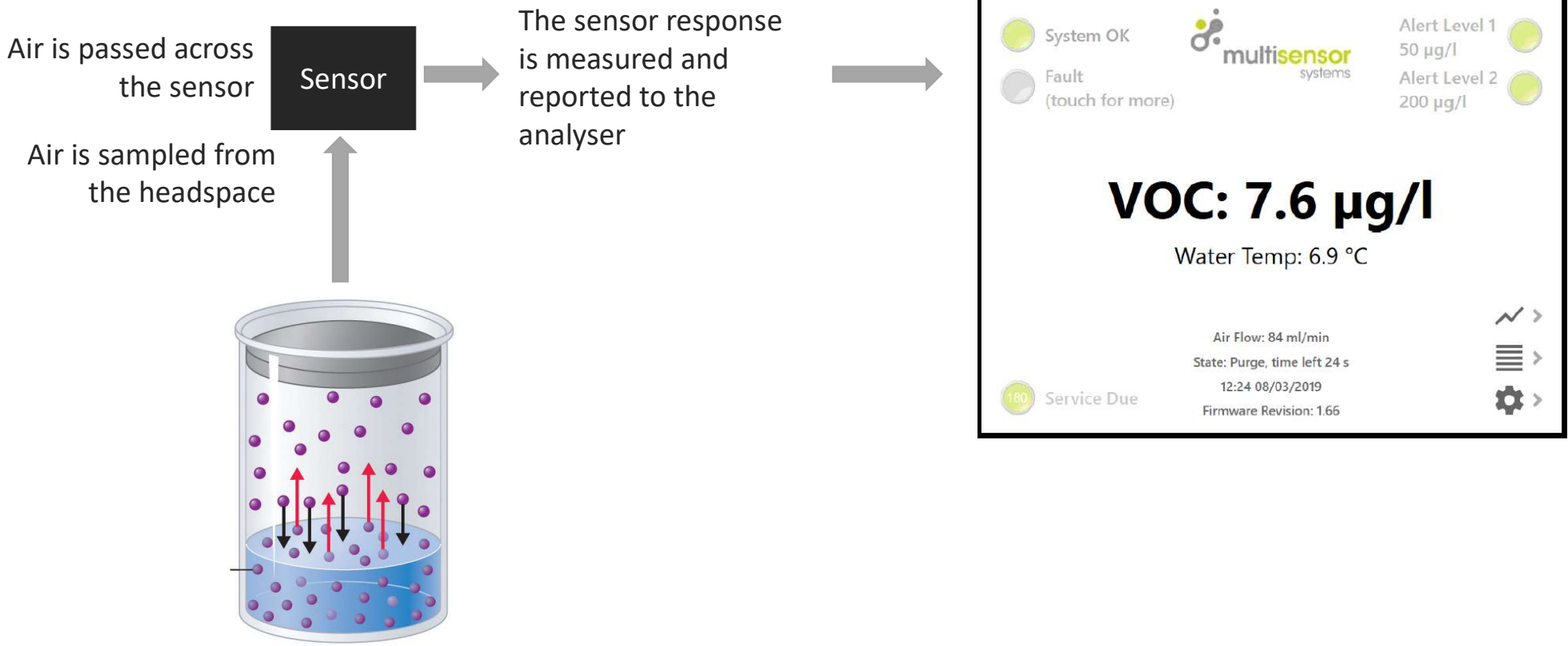


Henry's Law

The concentration of Volatile components and Water Vapour in the headspace increases until equilibrium is reached with the concentration in the water.



e-nose + Henry's Law



VOC in Industrial Effluents and Sewage Systems

The Problem



Application 1: Industrial Effluents

Discharge of VOCs into wastewater is an endemic problem in chemical processing and other industrial processes.

For this reason, many industrial facilities have purification plants to remove the bulk of these contaminants from the water before it's discharged.

However spills can overrun the treating capacity and lead to illegal discharges, pollution, fines and PR disasters.



Application 2: Cooling Water

Hydrocarbons in cooling water are a recurring problem in the industrial sector.

First of all they represent a loss of hydrocarbons.

Secondly it affects the cooling capacity of the water.



The ideal monitoring system

An Monitoring System should have the following characteristics:

- Comprehensive
- Fast
- Robust and Reliable
- Low maintenance

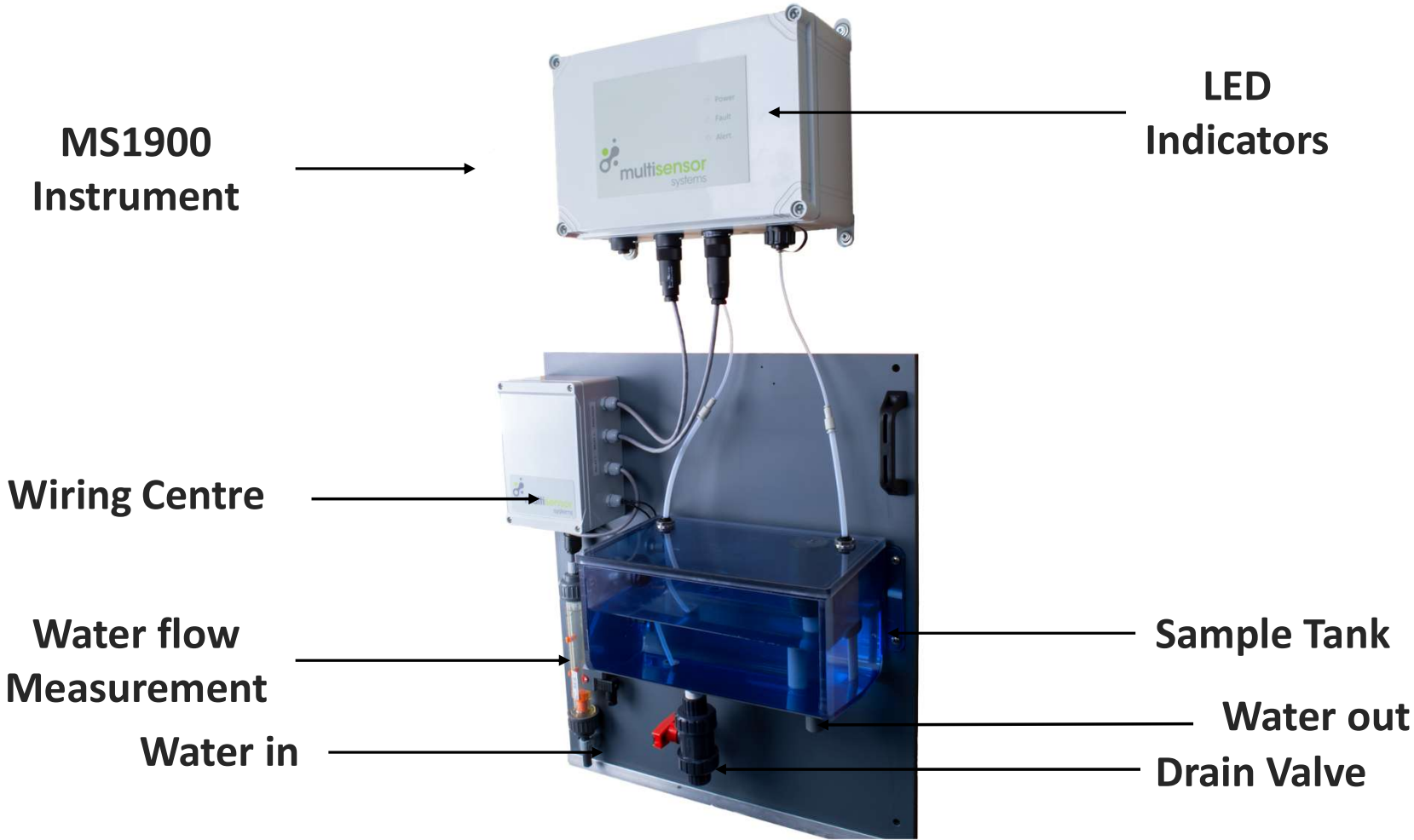


We cannot predict the source of pollution for this reason we need a comprehensive detection technique

**“Is this water good to be released or should it
be treated further?”**

YES or NO?

The MS1900 System



The measurement process

- Water flows continuously through the sample tank
- Dynamic equilibrium is formed in the sample tank headspace
- Gas concentration in headspace is proportional to concentration in the water
- Gas in the headspace is sampled continuously/at intervals by our sensor
- Values are calculated and are transmitted on the 4 – 20 mA output

Product specifications



Parameter	Value
Range	100 ppb – 10 ppm
Accuracy	+/-15%
Measurement	Continuous (longer periods available)
Data Storage	µSD Card
Data Interface	4 – 20 mA; Profibus and Modbus optional
Alarms	x1 Via Relay Drivers, Levels User Definable
Operating Temperature Range	0 – 50 °C (standard)
Water Temperature Range	1 – 40 °C (standard)
Power	90 – 240 V AC; DC version available
Consumables	Every 6 months (air filters), 12 months (air pumps)
Validation	Every 6 months

Bi-annual service

Service

- Every 6 months
- Cleaning of tank will depend upon levels of suspended solids, biofilm and filtering in place

Includes:

- Replacement of filter media, dust filter
- Check for air leaks, air pump efficiency, operation of other components
- Data download (from SD card or internal memory) for processing
- Validation done using the Validation Kit
- Update of firmware where necessary

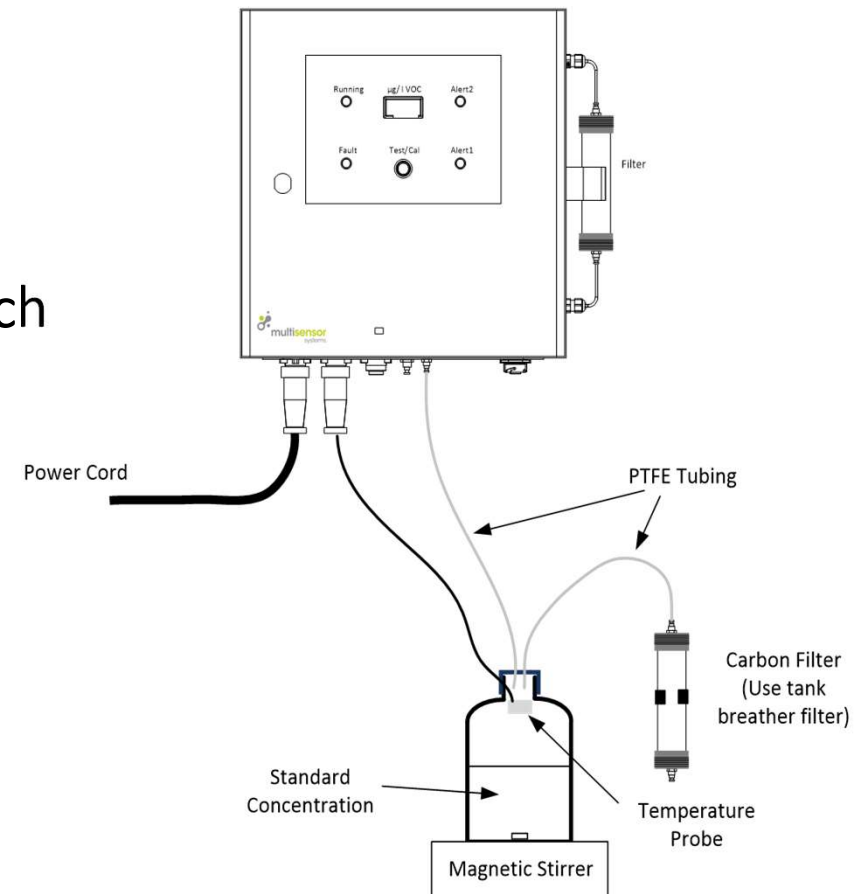


Validation

Factory calibration with Toluene.

Validation using the Multisensor approved Validation Procedure and Validation Kit which includes:

- Toluene Standards
- Sample bottle
- Temperature probe
- PTFE Tubing



MS1900 VS Other Technologies



MS1900	Fluorescence/UV
Not affected by turbidity	Affected by turbidity
Very little maintenance	Can require frequent cleaning
Measures all volatile hydrocarbons	Only measured PAH



MS1900	PID
Not affected by humidity	Affected by humidity
Do not need a dehumidifier	Needs a dehumidifier
No lenses to foul	Lenses are affected by dirt, dust etc.



The science: graphs, tests and data

MS1900



Some of the detected compounds

BTEX

Benzene

Chlorobenzene

1,2-Dichlorobenzene

1,3-Dichlorobenzene

1,4-Dichlorobenzene

Ethyl Benzene

Isopropanol

Isopropylbenzene

Naphthalene

Styrene

Toluene

1,2,4-Trimethylbenzene

1,3,5-Trimethylbenzene

1,2,4-Trichlorobenzene

m-Xylene

o-Xylene

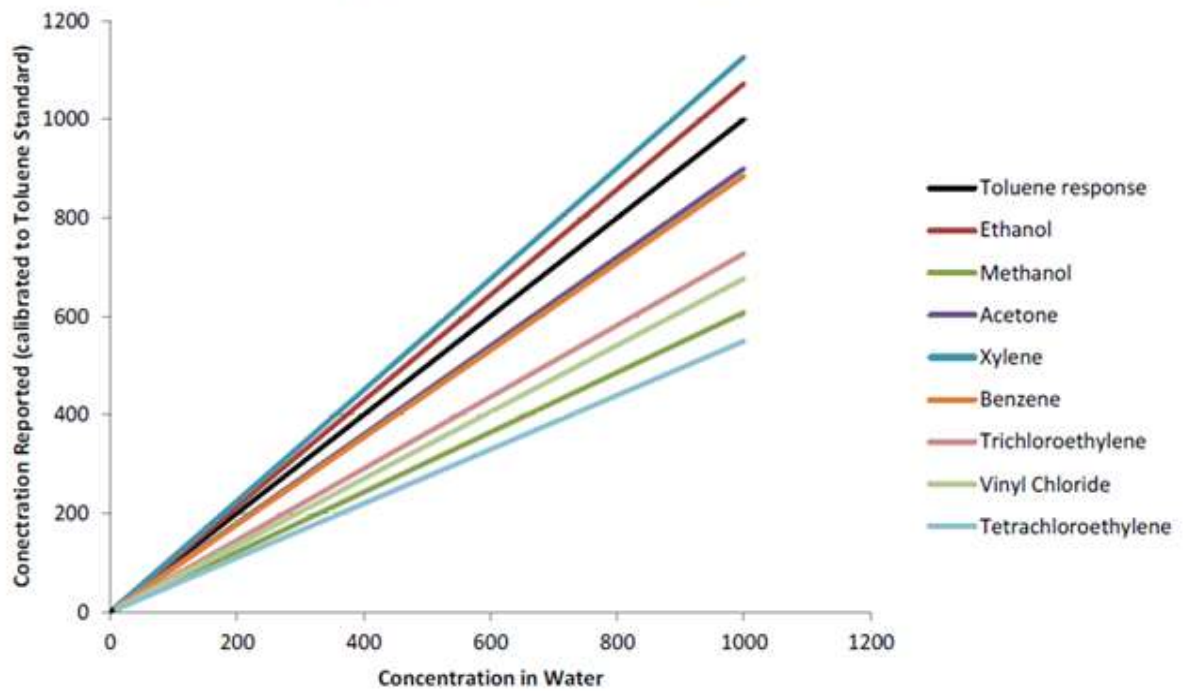
p-Xylene

Chloroform

Methanol

Response to Various Compounds

Response to Various Compounds



These are just some examples of how the system responds to various compounds

Summary

- Continuous mode.
- Reports as $\mu\text{g/l}$ TVOC as Toluene surrogate*
- Can be calibrated for specific substances
- User definable alarm levels
- Catches VOC chemical spills not just hydrocarbons
- Alarms to SCADA and other communications interfaces
- Installed at hundreds of sites across the world

* Other calibrations available



Summary

- Specifically designed for industrial effluents
- A strong support network
- Continuous mode, not affected by turbidity
- Low maintenance, robust, low cost of ownership
- International presence, local support



The best industrial effluent monitoring system

For more information

English (US): www.multisensorsystems.com
Spanish: www.multisensorsystems.es
German: www.multisensorsystems.de
French: www.multisensorsystems.fr
Italian: www.multisensorsystems.it

And many more coming!

Sensing, Measuring, Protecting