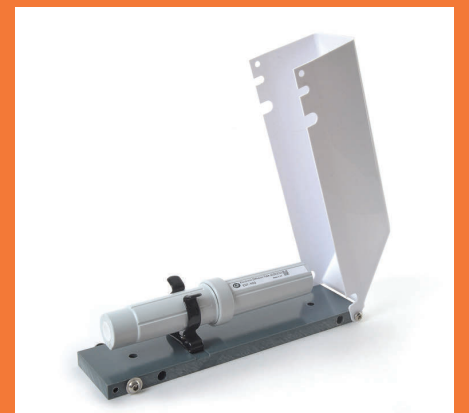


MAJOR NEW LOW-COST AIR QUALITY MONITORING TECHNOLOGY

Alphasense recently launched the new Electronic Diffusion Tube (EDT) in response to demand for low cost monitoring with the ability to monitor semi-continuously. "Diffusion tubes have provided low-cost air quality monitoring for decades," explains Alphasense Director Arthur Burnley. "However, they only provide an average reading over several weeks, and results are generally delayed until after laboratory analysis."



"The EDT resolves both of these issues whilst retaining the advantage of low cost. This is because the EDT contains an advanced electrochemical sensor that logs readings and transmits data via Bluetooth to an android tablet or mobile phone running the EDT App; making it ideal for recording air quality at congested junctions, construction sites, warehouses and offices for extended periods."



The EDT is a single gas monitor and users can select from a range of gases at the time of ordering. These include NO₂, NO₂ + O₃, SO₂, H₂S, NO, NH₃ and CO, with relative humidity and ambient temperature also being recorded for every measurement. Typical applications include monitoring urban air quality, checking livestock welfare, and recording waste water treatment and other odour nuisances.

Capable of storing 500,000 data sets, the EDT can operate remotely for months, downloading when convenient. Users simply approach the EDT within 10 meters, and it will recognise their device and download on command from the EDT App. Data can be sent to the cloud for analysis or downloaded to the user's laptop or network.

The instrument is powered for up to eight months by two replaceable Lithium AA cells, and users are able to set any logging interval from one second to three days. The EDT can be used as either a hand-held unit or fixed to a wall or post, using the protective mounting bracket.

Odour Monitoring Application

Following complaints of nuisance odours, a major UK water company sought a cost-effective method for monitoring trace (ppb) levels of hydrogen sulphide (H₂S), a toxic gas characterised by a 'bad egg' smell. This gas was chosen for measurement because it is usually the predominant component of a cocktail of gases that can contribute to odour at wastewater plants. Hydrogen sulphide is therefore commonly used as an indicator gas where odours arise from wastewater.

The human nose is highly sensitive to H₂S, with most individuals able to detect at two to three ppb levels, so monitoring equipment must be able to monitor H₂S at these low levels.

In order to respond effectively to the odour complaint, the water company needed to be able to monitor at a location with no mains power between its pumping station and the residential development. It also needed to monitor continuously so that the effects of different plant processes could be correlated with H₂S levels.





The Alphasense EDT is ideal for this application and was supplied pre-calibrated and set to record concentrations every two minutes. Mounted in the protective bracket, the EDT was quickly and easily mounted on a fence in an ideal location, running on internal batteries and logging data to an internal SD-card.

Bluetooth communications enabled the water company staff to collect data regularly over a 3 month period. As a result, it was possible to identify the processes that resulted in H₂S spikes, and to thereby implement process changes to minimise the release of odorous gases. The EDT therefore enabled the water company staff to respond to the complaint in a professional manner, resolving odour issues to the satisfaction of the local residents.

Summary

In addition to odour monitoring for hydrogen sulphide or ammonia, Arthur Burnley also believes that there will be a major market in traffic related air quality: "Air pollution is a major issue politically and in the media, with towns and cities around the world regularly exceeding safe air quality levels, resulting in hundreds of thousands of premature deaths.

"Urban spaces are suffering from air pollution and streets and pavements are the most hazardous to wellbeing because vehicle emissions concentrate at the roadsides. Politicians, architects and urban planners are therefore focusing on lowering the concentrations of particles and nitrogen dioxide (NO₂).

"Air quality improvements can only be implemented effectively with appropriate and comprehensive levels of monitoring, so that the effects of mitigation measures can be properly assessed. The launch of the EDT will therefore be great news for consultants, researchers and local authorities, because it provides them with a simple low-cost way to monitor NO₂ in almost any location."



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