

MOBILE POLLUTION MAPPING MADE EASY WITH AN INNOVATIVE PLATFORM FOR THE FIELD

Increasing environmental concerns and ever tightening legislation have led to a demand for quick and easy techniques to detect and map pollution levels in the field. Whilst numerous specific analytical techniques exist, the DV3000 is unique in offering real time field measurement at ppb levels for up to 15 gases simultaneously in a mobile platform.

The measurement of Benzene has in the past been difficult due to cross interferences from lower toxicity species like Toluene or Xylene. In some techniques these compounds are not separable potentially leading to the over-reporting of Benzene concentrations. This is a major issue because Benzene is so much more toxic than similar aromatic compounds (for instance, the STEL value for Toluene is 150 times higher than that for Benzene). The Duvas UV DOAS technique means that there is complete separation of the BTEX compounds and the Benzene level reported is not influenced by concentrations of other BTEX gases.

The DV3000 has been widely used by the US EPA (Environmental Protection Agency) to do field measurements in the investigation of industrial pollution. They have found the rugged performance and ppb sensitivity particularly useful in the measurement of hazards such as benzene which is not readily measured by other techniques in a mobile environment.

Until now Benzene has been virtually impossible to measure specifically in real-time in the field in sufficient detail to map a plume of pollution. Traditionally a technique such as PID would have been used which would not have been specific enough to identify Benzene but merely hydrocarbons, or at best higher hydrocarbons. Having the ability to be specific means that false positives are avoided and the identification of storage tank or pipe which is leaking is made more straightforward.

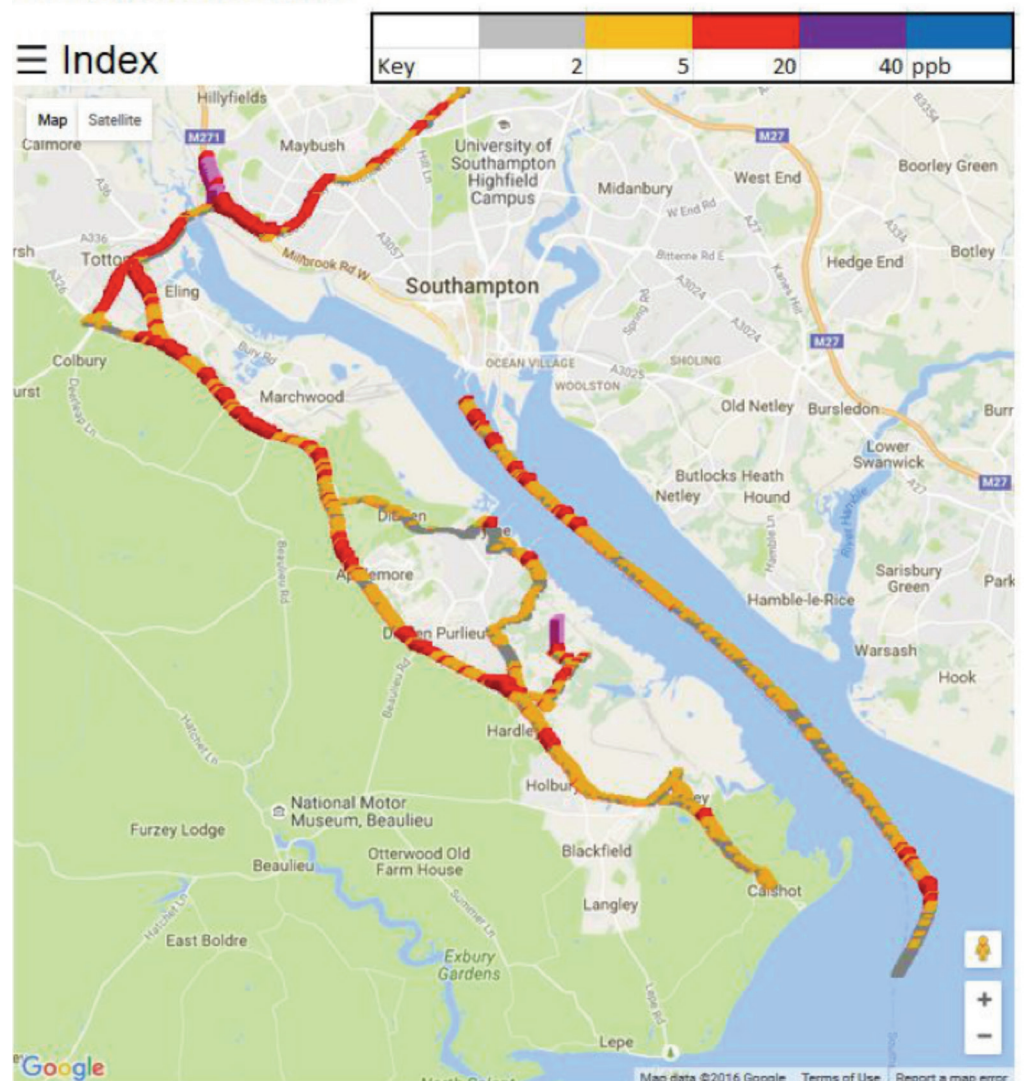
Recently added Duvas developed pollution monitoring software has further increased the usefulness of the DV3000 in this application. The monitoring results can be integrated with the mapping application on the Android tablet which is available as an option with the DV3000 or, alternatively, the results can be integrated with the mapping software on the user's PC at the report writing stage.

The mapping software is configurable so that different colour icons show different concentration bands enabling at a glance assessment of whether there is a concentration of concern. The data can be compared with that for other species thus enabling further investigation and differentiation of species.

For short term usage, the DV3000 can be used simply located in the back of a suitable car or SUV with the inlet hose sampling out of a side window. Power can be supplied by the built in battery packs or through a 12/24v converter from the vehicle supply. Vehicle speed should be kept below 10mph to minimise airflow sampling effects. Results obtained using this very simple approach are illustrated below during a monitoring session around the Southampton area. This type of analysis opens up the potential for the use of a DV3000 in making environmental decisions – for example it seems that trees or enclosed fencing can allow high concentrations of Benzene to develop in densely trafficked areas. There is the potential for urban planners to use the DV3000 to help design and realise a safer and more pleasant environment.

An alternative more sophisticated approach is offered by the custom Duvas roofbox approach. Duvas have designed an integrated roofbox solution in which a special version of the DV3000 is integrated into a Thule roofbox which can be attached to the user's vehicle as required. Data from the unit is fed through an umbilical connection to a pc screen to give real time viewing of the results.

Duvas Gas Test in Southampton area on 16/08/2016 - Benzene Results



Author Contact Details

Dr David Frew, CEO, Duvas Technologies Ltd • Email: d.frew@duvastechologies.com • Web: www.duvastechologies.com

Read, Print, Share or Comment on this Article at: Envirotech-Online.com/Articles

