

IFAT 2008 Measuring technology – Trends in mobile gas detection

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Gas detectors are essential in environments where toxic or explosive gases are used or stored, in areas where oxygen levels are low, for example in badly ventilated rooms, and in shafts, tanks and sewers. In particular the fermentation or rotting processes in sewage treatment and the production of biogas can give rise to noxious gases, often in unfamiliar mixtures. At IFAT 2008, which takes place from 5 to 9 May 2008 in Munich, visitors have the opportunity of finding out all about the latest trends in the sector and the technological solutions to handle the problems.

There are basically two types of gas detector – stationary and mobile devices. Fixed systems are generally only equipped with a sensor designed to detect a specific harmful substance; they continually monitor the observance of limit values. Mobile devices can be moved from place to place each day if required. In general they are used to monitor rooms used by people, to check the atmosphere in containers and to detect leaks.

Various different sensor technologies are used in detection. Toxic gases and oxygen are detected on the basis of electrochemical processes, whereas in carbon dioxide detection infrared (IR) measurement technology is used. In the detection of combustible gases with hand-held measuring devices, IR technology does not yet deliver the accuracy required in the standards. Here the standard procedure for measuring the lower explosive limit (LEL) is still catalytic combustion, also called recalcence.

Stricter legal regulations and ever more specific customer requirements are prompting manufacturers to push ahead with new developments and innovations. As the workplace limit values for dangerous substances continue to decrease, more and more sensitive sensors are required. Modern gas detectors have to reliably detect even the lowest concentrations and sound the alarm. And as far as possible without any false alerts. For example with many gases it is no longer exclusively the peak values that are taken when considering potential harmful influences on employees, but long-term exposure. This strategy is also prompting greater sensitivity of sensors. One example of a recent change in the law which is having immediate effect on the measuring technology used, comes from the US: here the limit values for combustible components in the atmosphere, such as methane and hexane, were tightened. Until now a level a percentage proportion below the lower explosive limit has been tolerated, for example 10 percent LEL (corresponds to 4400 ppm) for methane. Now the limit for this toxic substance is 1000 ppm (parts per million, or 10–6), which is a much tougher measurement task.

Another challenge for sensor technology in gas detectors are new dangerous substances that are associated with new production techniques. Here gas detection technology has to come up with adapted or brand new sensors which ensure that people working in possibly endangered areas are reliably warned.

In general there is a trend towards multi-sensor devices, which can detect up to six different gases. Despite the extended functionality these devices have to be usable by every employee, quickly and without the need for any complicated instruction. The manufacturers are responding to this need with simplified operating panels and menu-guided operation, for intuitive use of the devices.

For enhanced comfort, the mobile gas detectors are becoming smaller, flatter, lighter and more robust. Almost all models are now waterproof and dust-protected; some have special functions such as a rotating graphic display.

When harmful substances are detected, it is important for the warning to be understood and heard by all people working in the area. To ensure this, some of the more modern devices not only have acoustic and optical signals but also a vibration alarm and a traffic-light system of warning lights: green means 'no danger', yellow means 'alert' and red means 'danger'.

Changes in the organisation of work also have an influence on the design of gas detectors and their peripheral technology. Customers are demanding simplified, faster and therefore cheaper maintenance. One option here is the use of docking

stations. The hand-held measuring devices are inserted into these stations and an automatic function test is then started. All documentation requirements are of course also fulfilled. The concept of preventive maintenance ensures that devices are properly inspected and renewed before any failure occurs. IFAT 2008 next year in Munich will be a shop window for all the technology, products and services in the field of gas detection.

For further information go to: www.ifat.de

IFAT

IFAT is the world's most important trade fair for the environment and waste disposal – for water, sewage, refuse and recycling. In 2005 the event attracted a new record number of participants with 2,223 exhibitors from 36 countries and 109,000 trade visitors from 166 nations. IFAT 2008, which takes place in Munich from 5 to 9 May 2008, offers an attractive exhibition programme: innovative solutions and state-of-the-art technology for practical, economical operations, a broad range of professional services in the area of water, sewage and refuse management and numerous attractive information events.

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