

GAS MONITORS

The gas monitor, as opposed to the flue gas analyser has a very different function. Generally it is designed to measure one or two gas components alone for a specific purpose. This may be of an environmental nature, such as measuring SO₂ or H₂S from a sewage system, perhaps CO₂ or CO from a burner stack. The application can, however, be completely different. A gas monitor is needed for process control in all industries where mixtures of gases are used in any larger quantity. Small quantities are generally taken ready-mixed from a bottle, but this is not economic for larger or variable quantities. These have to be mixed as needed and the mixing process must be controlled in some way. There are cases where it is possible to just guess and add, but these days this is no longer common. Gases are expensive and in many industries the quality control procedure will not allow such methods. It would be a strange thing if the pharmaceutical companies started using approximate measures and rough guesses for making medicines!

Particularly the food-packaging industry faces this problem daily. Different foods are packaged using different additions of carbon dioxide to produce varying levels of oxygen. This helps to keep them fresh for longer without the need to add preservatives or freeze them. The packaging line must be adjusted regularly according to the type of foodstuffs to be packed as a consequence and the admixture of gas must be controlled accurately to ensure that the optimum storage time is achieved, otherwise the foodstuffs will deteriorate before the expiry date marked on the packaging. Since this can lead to all sorts of problems including legal proceedings for food-poisoning, no effort will be spared to avoid this type of trouble.

To achieve this object, a gas monitor must be capable of producing a signal able to control a process and the most common way is to use an analogue output of one sort or another. The typical industrial application will use 4 – 20 mA as a control signal, although voltage outputs of 0 – 10 VDC are also to be seen. More modern equipment may use serial communication, but this will mean a high level of integration between the various manufacturers since there are no fully accepted protocols for this type of application unfortunately. Serial communication has the great advantage of being bi-directional. If the receiving end has not fully understood the message it can request a repeat. Also, if communication should break down due to broken cables or other faults, this can be detected as a lack of response and not just interpreted as a zero signal.

Other features are also possible in this type of equipment such as outputs for warning levels and integrated displays for service purposes. Although not strictly essential in most applications they have definite advantages in the ease of use. Basically, the design will be dictated by the place of operation, which may be hot, dirty, damp or dangerous. This is simply a question of the external housing and will nevertheless have the same basic internal parts.

A gas monitor may be described by some as a stationary gas analyser, but there is a lot more to the matter than that.