

Newer (Mis)Uses for the Flue Gas Analyzer

Although the flue gas analyzer was designed, as the name implies, for measuring gases in flues, there are an increasing number of applications where a flue gas analyzer is used outside of the typical field.

One obvious possibility to use a flue gas analyzer is vehicle emission measurements. This is done in many countries with a portable flue gas analyzer, although these are generally not passenger vehicles, but more forklift trucks or similar equipment. Particularly in the mining field, emissions are very important, and the flue gas analyzer is a convenient means to measure such systems. It is portable and can show all the relevant components. Modern vehicles generally have very low emissions of carbon monoxide and other gases, which are easily within the ranges of the usual flue gas analyzers. There are sensors available which allow a flue gas analyzer to measure high levels of carbon monoxide should this be necessary, but in most cases this will not be required. With an infrared sensor for hydrocarbons fitted, such a flue gas analyzer is in use for measuring the gases from industrial vehicles, passenger vehicles and boats in several countries. Whilst it may not provide the accuracy of the fixed systems used in major service outlets, the flue gas analyzer has the advantage of being easily portable and capable of operating from an internal battery.

Process controls of various types rely on a set concentration of gas being present, and here the flue gas analyzer can often be used as a check on online instrumentation. Generally such processes require oxygen, carbon monoxide or carbon dioxide, all compounds which are present in flue gas. This is often just using the opportunity that such an instrument is available, but in occasional cases where more than one gas component is to be measured, a flue gas analyzer has proven to be the best choice for the job. Again, it has the great advantage of being portable, so a flue gas analyzer can easily be moved from one site to the next where it is needed. Particular examples where a flue gas analyzer is often employed are the cement and glass industries. Here, the flue gas analyzer can also be used for its original purpose, saving the cost of an additional instrument. This is also where the gas monitors come in, as well as the CEMS. Particularly the gas monitor can be seen to be increasingly taking over this role from the flue gas analyzer due to the need to measure these factors continuously.

Now that more attention is being paid to the factor of ambient CO in the home environment, flue gas analyzers are being fitted for this task. A flue gas analyzer will generally have a carbon monoxide sensor, so this can usually be used for measurements of ambient CO, although the range to be measured is obviously different. The major difficulty is setting the zero point for carbon monoxide in the flue gas analyzer. Normally this is done using ambient air, but this is obviously not possible if the ambient air is to be measured with the flue gas analyzer. The two possibilities are to zero the flue gas analyzer in fresh air (outdoors), or to use a stored zero point. If the analyzer is capable of storing a number of zero points according to temperature etc., then this is perhaps the best way. Some countries even require that the ambient CO around the burner be measured when the annual check of the combustion system is carried out. Since the flue gas analyzer is obviously needed for the combustion test, it makes sense to integrate the two instruments.