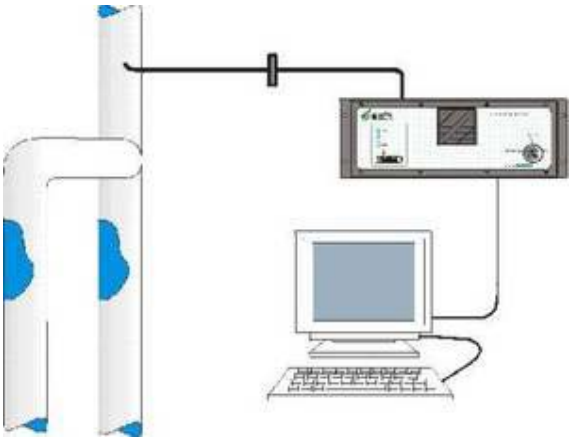
Organic Solvents at a Printers

The Fast Response Triple gas monitor - INNOVA 1311 used in this application.

The Problem

A printing company had a ducted extraction system already installed to service the main colour printers. A monitoring system was required to provide a total organic emission concentration from the final emission duct. This printing company had no experience of monitoring and did not wish to dedicate a great deal of time or man-power to the running of the system but rather to continue their own business in the most efficient manner.High quality printing often requires the use of printing inks that have organic solvents as a carrier. Monitoring the emission from a ducted extraction system provides not only an indication of the environmental aspects but also the efficiency of the printing process - why use extra solvent if it is not necessary and only adds to your costs?



Monitoring solvents in exhaust system

The Solution

In this instance, a Fast Response Triple Gas Monitor - INNOVA 1311 was recommended. This monitor uses the PAS/MA technique and a special optical filter which can measure the desired volatile organic compounds, in this case propan-2-ol (isopropyl alcohol). The INNOVA 1311, with its 19 inch rack mounting case, can be installed in a convenient place, out of harms way, and receive the measurement samples via PTFE tubing, which is easy to fit. A definite advantage of the INNOVA 1311 for the printing company is that it requires no gases or other consumables in order for it to operate.The monitor's analogue output provides a continuous data flow to the chart recorder while the built-in alarm and service request functions let the operators know when something requires attention. A calibration check is only required monthly and therefore the monitor gets on doing its job while the printers get on with theirs. The monitor can provide a reading of the vapour concentration every second to the chart recorder, however, the variation in the concentration during the printing process and at start and finish was not so great as to require this. Consequently, an averaged

measurement time of 5 seconds was selected so that the noise generated by slight variations in the concentration would not produce a broad band on the chart recorder

Discussion

Over recent years organisations have developed significant health and safety programmes for the welfare of their workers. This has introduced a much cleaner working environment with the collection of particles, fumes and vapours from working areas either by increasingly sophisticated enclosures or scavenging systems. The material is then collected and depending upon its nature (solid, liquid or gas) disposed of accordingly. A major disposal route for gases and vapours is by venting them to air. A direct consequence of this method though is that the material which was a cause for concern in the working area is now being discharged directly into the factory grounds. Good design of vent extraction systems means that the efflux velocity from the ducting and the height of the duct diminishes any problem in the locality. Having introduced sophisticated safe working practises for their employees, organisations are now discovering that they must turn their attention to the impact they are having on their neighbours. Monitoring emissions to the atmosphere is becoming a much more common and expected practice. The range of compounds that have some form of monitoring requirement placed on them either for odour or safety reasons is wide. The majority of them though are organic solvents and some of them are required to be monitored individually whilst for some other applications a total figure for the solvents is satisfactory.