OPEN-PATH FTIR IN AN INDUSTRIAL FACILITY

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Key requirements for an advanced air monitoring system in an industrial facility include: cost-effective, reliable, sensitive, accurate, large sensing volume and large dynamic range. Point monitoring systems (gas chromatography, mass spectroscopy, electrochemical, etc.,) are the traditional choice for meeting some of these requirements. Open-path FTIR offers promise as a cost-effective supplement (or alternative) to point monitoring systems. Here, we consider open-path FTIR because of its versatility and commercial availability. First, since the IR beam is directed over a long distance (typically >100 meters), a much larger area is monitored relative to the point monitor. Second, the FTIR records a fingerprint of the compound(s) present in the path, and is therefore, very specific. Also, the FTIR has a larger dynamic range than the point monitor and does not require a recovery time before sensing is resumed. Automation is achievable which allows the determination of up to 40 compounds simultaneously on a continuous basis.

Technical issues such as cryogenic detectors, interferometer stability, mechanical design and instrument housing must be given special attention for a working system to become viable. Some commercial suppliers have just begun to addressed several technical aspects such as speed, optical configuration, computational procedures, advanced software, etc..We have had the opportunity to evaluate open-path FTIR for applications inside the plant environment and will be discussing the utilization of open-path spectroscopy for industrial applications.