CONTINUOUS, SELECTIVE, AND ROBUST

FENCELINE MONITORING, USING SIFT-MS

The selective, sensitive, rapid, and robust analysis provided by SIFT-MS makes it uniquely suited to outdoor air quality monitoring. SIFT-MS enables potential environmental incidents to be detected, identified, and remedied quickly, before they escalate to social or regulatory issues.

Regulators worldwide are imposing tighter and more comprehensive emissions requirements in response to increasing concern about the impact of airborne pollutants. Fenceline emissions have traditionally been monitored through a combination of off-line laboratory techniques, such as GC-MS or HPLC, which lack the time resolution, responsiveness, and comprehensiveness of analysis to provide timely information on such a dynamic and complex matrix. Online monitoring is an important tool to ensure the root cause of air quality perturbations can be rapidly identified and addressed.

Selected ion flow tube mass spectrometry (SIFT-MS) is a revolutionary direct mass spectrometric technology for continuous, sensitive, selective, and robust analysis of air down to pptv levels, in near real-time. Syft Technologies' SIFT-MS instrument is a unique monitoring tool with the ability to measure volatile organic compounds (VOCs) (including sulfides, aldehydes and aromatics), inorganic compounds (including NOx, SOx and H_2S) along with inorganic acid gases (including HCl and HF) directly in a single analysis without sample preparation.

Continuous monitoring data for a selection of environmentally relevant compounds collected at the fenceline of a semiconductor fab is shown in Figure 1. The sensitivity and selectivity of SIFT-MS enables frequent spikes in toluene to be detected and quantified selectively alongside a wide range of other compounds at varied concentrations. Independent trends, such as the daily 11am spike in isobutyl alcohol and propanoic acid, can be utilized by engineers to make informed process control decisions.

Figure 2 shows data taken at the fenceline of a petroleum refinery in New Zealand, which, when combined with local wind direction readings, allowed process engineers to trace elevated emissions at the site boundary back to a storage tank. Automated operation, reporting, and alarms in real-time enable fast response to pollution events as they occur.

SIFT-MS instruments are readily integrated with both fixed and mobile sampling systems. Van or trolley mounted instruments allow for targeted identification and pinpointing of pollution sources. Multiple-port sampling systems can be implemented for continuous monitoring over a wide range of locations with a single instrument at a fixed location.

Figure 1. *Online monitoring data was collected for a selection of environmentally relevant compounds, at the boundary of a semiconductor fab. Individual trends over a comprehensive range of emissions can be monitored simultaneously, allowing for a greater understanding of the origins of these unwanted compounds.*

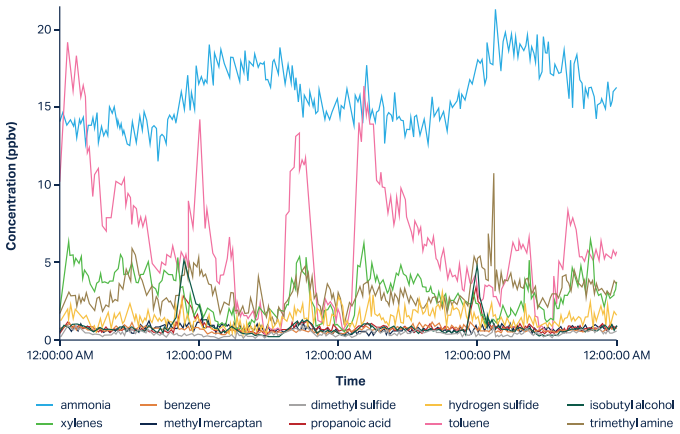
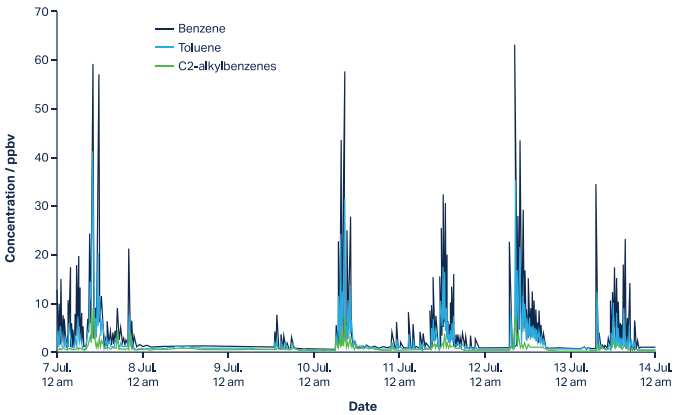


Figure 2. *Continuous, speciated monitoring of fenceline emissions provides valuable information to engineers for process improvement and resolving issues. Fenceline data collected at an oil refinery in New Zealand was combined with wind readings to pinpoint a storage tank that was regularly releasing volatile organic compounds.*



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