

COMBINED VOCS AND ODOR MONITORING FOR REAL-TIME SURVEILLANCE & OPTIMIZATION OF CHEMICAL AND ODOR CONTROL UNIT

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Session: Gaseous species at low concentrations

When odor issues occur at an industrial site, rapid diagnosis must be done to define the best source treatment strategy. Manual spot measurement sampling techniques and transportation to the laboratory can lead to poor sample quality that may not be representative of the site process conditions for factory managers to consider. Therefore, there is a need for online analyzers to monitor chemical and odorant constituents, which can illustrate good correlation with human nose perception, when needed.

In this presentation, the main features of two complementary systems tunable for odor monitoring and most recent case studies will be discussed.

The first solution consists of an automated Gas Chromatograph (autoGC) analyzer with sulfur specific detector which provide reliable measurements based on speciation and quantification of up to 15 sulfur compounds (tetrahydrothiophene, H₂S, methyl mercaptan, ethyl mercaptan, iso-propyl mercaptan, tert-butyl mercaptan, propyl mercaptan, 2-butyl mercaptan, isobutyl mercaptan, n-butyl mercaptan, dimethyl sulfide, methyl-ethyl sulfide, dimethyl sulfide, diethyl sulfide, and SO₂), total VOCs and odor intensity monitoring. When programmed with dynamic olfactometry sensorial methods (EN 13725 or ASTM 679-E04), it can provide odor concentration equivalence and illustrate process variation. When coupled with a local meteorological weather station installed on-site, data can be used to determine the impact of source emissions and can also define the contamination or olfactive source. SIAAP, a leader in WWTP management in the Paris region will demonstrate through results and customer testimony how these solution help to identify odor source origins.

Secondly, a fully automatic, wall-mounted instrument consisting of an autoGC with Flame Ionization Detection (FID) will be presented as an alternative method to track VOCs from the odor control unit (OCU) exhaust as biofilter and charcoal filter unit. Results will demonstrate how odor and chemical treatment performance ratio of the OCU unit are determined and how the process unit is optimized. Thanks to the addition of smart features, the user and charcoal filter manufacturer can both request notifications by SMS when media support must be replaced based on shelf life monitoring of the unit. A technically focused presentation of the analyzer will demonstrate how an automatic process gas chromatograph works in field conditions without the need for gas cylinders used for carrier or calibration gases, which will help to meet site space constraints.

These solutions have been deployed in composting sites, WWTP, methanization centers or odor and chemical control units in France, Belgium and the UK. Users can access real-time information of the chemical and olfactive global fingerprint to demonstrate their compliance with legislation.