

## Agilent air toxics solution Continuous on-line analysis of VOCs

Environmental



**One of the most important requirements for an environmental mobile lab is the ability to monitor volatile organic compounds (VOCs). The lab must be capable of onsite continuous sampling and analysis. The Agilent 5975T Low Thermal Mass (LTM) GC/MSD with sampling and thermal desorption from Markes International provides an ideal solution.**

### Description of Industry Application

Air quality is one of the most important worldwide concerns because it closely relates to human health. Toxic volatile organic compounds (VOCs) in ambient air (air toxics) are monitored in many industrial and residential environments as a measure of air quality. Several national and international standard methods such as US EPA method TO-15 and TO-17 have been developed for air toxics and related applications.

A fast method integrating online sampling and analysis of toxic volatile organic compounds (VOCs) in ambient air was developed on the integrated transportable system, the Agilent 5975T LTM GC/MSD. The analytical challenge for a field-transportable GC/MS instrument is laboratory-level performance with fast screening analysis capability. The Agilent 5975T LTM GC/MSD, combined with the cryogenfree and flow controlled online or canister sampling equipment UNITY-Air Server from Markes, Inc., is a complete automatic solution for air monitoring. This solution provides continuous online data monitoring that helps to associate emissions with local industries when correlating the data with local weather parameters such as wind direction, precipitation and temperature inversions.

A Markes International Series 2 ULTRA-UNITY Thermal Desorber (TD) configured with Air Server was used as the sample source in this study. Air Server modules were added to a Series 2 (ULTRA-)UNITY system to allow a controlled flow of whole air from a canister or ambient air. The whole system was introduced directly into the electrically-cooled focusing trap of the desorber. The combined systems were operated under cryogen-free conditions to minimize operating and maintenance costs and to offer an optimal analytical sensitivity.

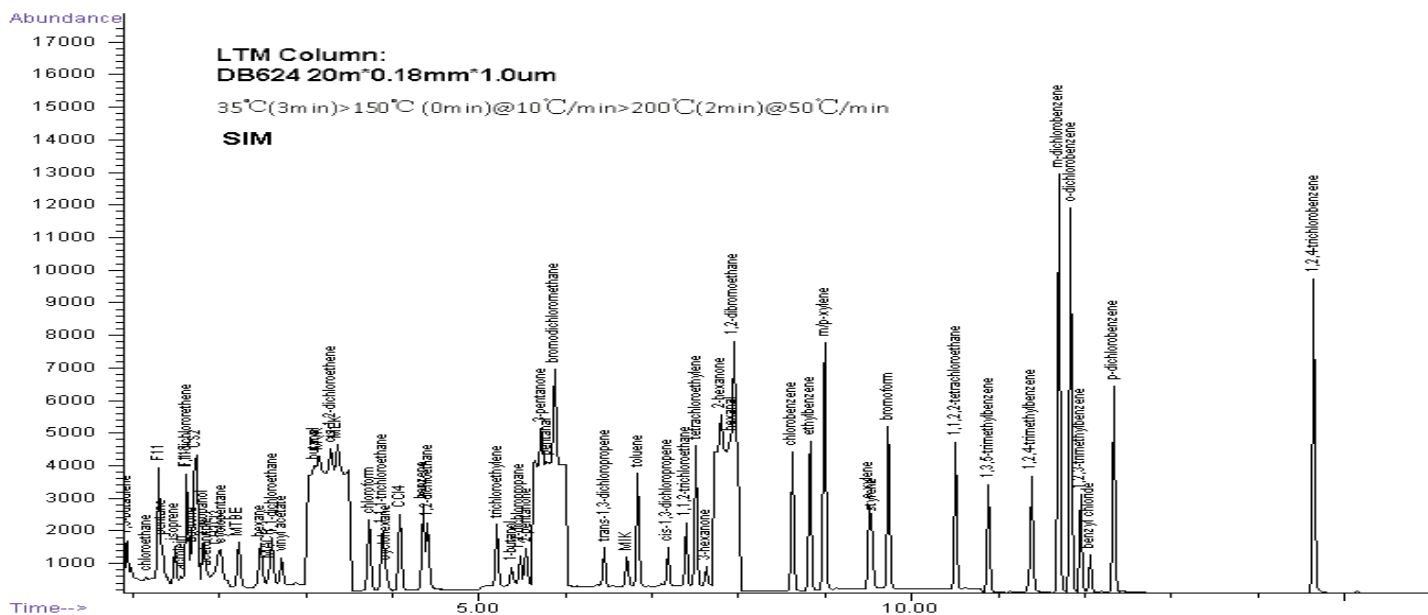
Low Thermal Mass (LTM) technology, used in the Agilent 5975T achieves high time resolution for continuous monitoring. The total cycle run time for this solution is approximately 20 min. Systematic online sampling and analysis for 62 VOCs in ambient air, on a half-hour basis, produce an extremely large and complex data set. However, the customized report template in Agilent ChemStation software can display the continuous variation tendency profiles of target compounds easily.

### Key Benefits

- Automated continuous online sampling technology make this solution easy to use and suitable for field environmental monitoring.
- This method achieves high sensitivity in determining most VOCs in air, at low ppb levels. Method performance also shows acceptable calibration linearity and good repeatability for most target compounds.
- LTM technology provides fast heating and cooling rates. Analysis of VOC components can be accomplished in minutes.
- A customized report provided by ChemStation software rapidly gives continuous variation profiles of target compounds.



**Agilent Technologies**



16 min for 60 VOCs  
MDL: 0.019~0.218 ppbv



## VOC in Air Monitoring With Thermal Desorber

VOCs compounds (over 60 VOCs):  
Short cycle time (~20 min) for continuous sequence analysis

On-line continuous measurement. No other sample prep required

Low detection limit (ppt~ppbv)

## Off-line VOCs Analysis for Harsh Environmental Air Sampling

Sample gas sample collecting – tube sampling by personal pump

Low-cost for standards preparation

Fast LTM column separation

High sensitivity

Meet EPA T017 criteria

Learn more:

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