Le Bulletin

Issue - December 2013

EXPERTS IN GAS ANALYSIS

MCERTS Certification for ambient air analysis on benzene and VOCs

Chromatotec® is proud to announce that the FID instrument airmoVOC (measurement of benzene but also 12 compounds of the European list between C6 and C12) and the PID instrument airToxic (measurement of Benzene but also BTEX compounds) have obtained MCERTS certification since June 2013.

These two MCERTS certificates have been delivered by SIRA Certification Service on behalf of the UK Environment Agency. They are based on the results of the tests managed by the NPL (National Physical Laboratory) in London*. These types of approval tests are described in the EN 14662-3: 2005 "Standard method for the measurement of benzene concentrations Part 3 Automated pumped sampling with in situ gas chromatography".

These two certificates have a European acknowledgement thanks to 3 important points:

- NPL is accredited ISO 17025 for the measurement of benzene according to EN 14662-3 Standard. This accreditation covers laboratory testing and field testing
- SIRA is in compliance with EN 15267-1 that defines product certification general principles.
- Chromatotec® is in compliance with EN 15267-2 that defines its production conformity and the design change management. This conformity is proven by the MCERTS Manufacturing Audit that was conducted by SIRA (Report Number 16A0385A).

The cabinet with the four instruments - NPL Laboratory

Chromatotec® is curently communicating the certificates to the national reference laboratories in charge of analysing the test reports to declare the instrument into their official list of authorized instruments. Mines de Douai, on behalf of the French governement and Instituto Carlos III on behalf of the Spanish government will be the first reference laboratories to analyze our test reports.
In addition Chromatotec® has written a publication in collaboration with the NPL concerning the tests which was published on the IET Annual Buyers'Guide 2013.
Full article Available on the Chromatotec® website on the "News" page
http://www.chromatotec.com

* NPL report number E09040018 dated 14th June 2013

Visit our booth n°144 J

Exhibitions 2014

- **ARABLAB - UAE**
  Dubai, 17-20 March 2014
- **ANALYSE INDUSTRIELLE**
  France Paris La Défense
  19-20 March 2014
- **CEM - Turkey**
  Istanbul, 14-16 May 2014
- **IE EXPO - China**
  Shanghai, 20-22 May 2014
- **WATERWEEK WASTEMET**
  Malaysia Singapore, 2-6 June 2014
- **PITTCON - USA**
  McCormick Place Chicago, IL
  2-6 June 2014
- **A&WMA - USA**
  Long Beach California,
  24-27 June 2014

Chromatotec® is a member of the european working group WG 12 for the standardisation for the measure of pollutants in ambient air

Chromatotec® regularly shares its experience on ambient air monitoring. This allows our company to keep its knowledge to a high level of expertise for the benefit of its instruments and its customers. That is why **Michel ROBERT, Analytical Department Manager of Chromatotec®** (michel.robert@chromatotec.com) was admitted as a member of the European working group for ambient air monitoring (WG12) and is part of the French delegation on behalf of the AFNOR.

This working group (exact reference: CEN/TC 264/ WG12) is in charge of reviewing the different European norms concerning ambient air monitoring : SO2, NO2, O3, CO, benzene and now ozone precursors (VOCs).
The current work involves the review of the EN 14662-3: 2005 standard regarding Benzene measures*. The final draft prEN 14662-3 : 2013 will be published mid 2014 after validation within the WG12 of the last comments of each country member.

The WG12 at the VSL Institute

A NWI (New Work Item) proposed by WG12 and approved by the Technical Committee TC 264 of the European Commission, is the determination of a new standard for ozone precursors measurement "Standard method for the determination of the concentration of volatile hydrocarbon ozone precursor by on line sampling, thermal desorption and gas chromatography".
The first meeting to start this NWI was held 30 and 31 October 2013 in the VSL institute at Delft (The Netherland).

* «Standard method for the measurement of benzene concentrations – part 3: automated pumped sampling with in situ gas chromatography»

NMTHC/CO/CO2 impurities measurement in pure gases

Chromatotec® has designed an analyzer for the measurement of impurities such as: CH4 / NMTHC / CO / CO2 in pure gases: the chromaCO option NMTHC (Non Methanic Total HydroCarbons).
Some companies (e.g. pure gases manufacturers) are producing or using Ultra High Purity gases (UHP) and are requested to do quality control of their cylinders. For such applications, highly sensitive analyzers are required.

Therefore, Chromatotec® offers the chromaCO option NMTHC for impurities measurement at few ppb concentration levels (LOQ of 20 ppb for NMTHC).

There are two possible configurations:
- For CH4 / NMTHC configuration, the analyzer is working with a trap, a column and a Flame Ionisation Detector (FID).
- For CO / CO2 configuration, a converter (methanizer) is integrated between the column and the FID to convert the different compounds in CH4. Then, these compounds are analyzed by the Flame Ionisation Detector (FID). The main advantage is to be able to analyze compounds which have low or very low response factors (e.g. HCHO) with a FID, or are generally not possible to measure (e.g CO / CO2).

The coupling of these two configurations offers a wide range of analysis possibilities and allows the customer to select the measurement according to his needs.

airmoTWA: New TRAP GC/MS/FID instrument for ambient air monitoring designed for onsite use

The airmoTWA in clean air room

To ensure people's safety and a good repeatability of industrial process, the analysis of ambient air is crucial. Electronic boards are produced in clean air room by complex lithographic process using very reactive chemicals. The nature and concentration of volatile compounds can be different depending on the chemical process and can also vary rapidly. There is a need to analyze precisely and continuously gas process in air with an instrument designed for industrial use.

Since 1986, Chromatotec® is a worldwide recognised expert in gas analysis, renowned and certified for its precise analysis in ambient air monitoring and natural gas. In industry, Chromatotec's systems prove their value in online monitoring, quality control and environmental protection.

They make substantial contributions to process control, to the improvement of product quality, and to the enhancement of system safety as well as to environmental protection.
Chromatotec® has developed a turnkey solution which allows the quantification and identification of compounds at ppt, ppb, ppm and % levels. The airmoTWA is a new industry standard for online and continuous TRAP/GC/MS/FID. It encompasses a specific trap to concentrate the sample, a column for separation of chemicals and two detectors: a new micro flame ionization detector (FID) and a mass spectrometer for quantification and identification respectively.
The airmoTWA is simple to use and incredibly sensitive and delivers robust and reliable performance. Particularly, the instrument can monitor and record a large number of concentrations of molecules and can have alarm systems which can be set to inform on important changes in the surrounding atmosphere.

In the Figure 1, a mass spectrometer chromatogram obtained analyzing ambient air is shown. The peak resolution and sensitivity of the instrument allows quantifying and identifying very low VOC concentrations.

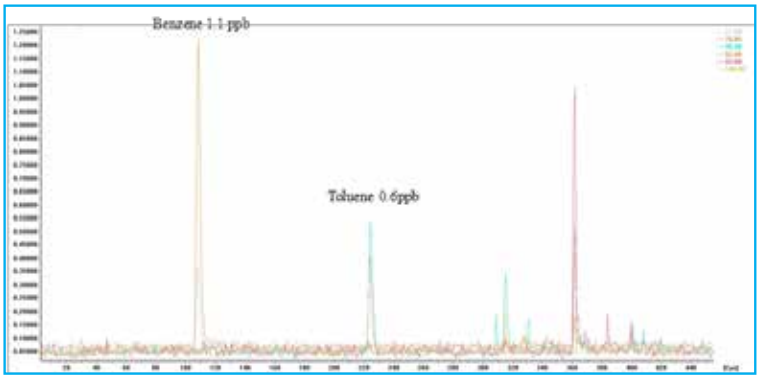

Figure 1: Results obtained with the mass spectrometer analyzing ambient air

Instrument for the preparation of gas standards for mono and/or multipoints calibration: airmoCAL M

Simple and accessible through its integrated software, airmoCAL M can be used to calibrate analytical instruments with standard bottles or permeation tubes.

airmoCAL M can automatically prepare and inject gas for all kinds of analytical instruments.
The principle of this device is based on mixing, dilution and injection of calibration gases, which can be useful in many applications such as calibration and validation of analyzers.

airmoCAL M

With three thermally controlled ovens and its mass flow controllers, it is possible to inject a large number of calibration gases from standard bottles or permeation tubes controlling rates and quantities. Each oven calibration can contain up to 6 tubes which allows a large number of reference gases without carrying gas bottles. The permeation tubes sold by Chromatotec® are certified in our laboratories and can produce very precise standards (sulfur and volatile organic compounds).

The software VISTACHROM allows gas injection in a timely manner or in a programmed sequence. Friendly and intuitive, the software can be used very quickly. It also includes a monitoring function for full traceability. All sequences can be saved to be recalled at any time. Also communication protocole can be used (modbus, jbus…)

Chromatotec® provides different calibration systems such as airmoCAL, airmoCAL D, airmoCAL MFC and airmoCAL M depending on customer needs.

Measurement of gas concentration in water

Nowadays, companies want to have an accurate control of their process in terms of efficiency and safety. As key parameter for process safety, corrosion problematic is becoming crucial for some applications such as cooler systems. In this sense, high level of oxygen in cooling water is increasing corrosion rate.
Therefore, to decrease oxygen content in such water, an addition of chemicals reagents is carried out. To control the efficiency of these reactions, the measurement of oxygen content in water needs to be done.
Chromatotec® has developed a specific system to degase and measure oxygen and other gases (e.g. hydrogen, nitrogen…) in dynamic water. The different gases are extracted with an inert gas (e.g. helium, argon…) and sent to the analyzer. The low detection limit (LDL) is 4 ppb of oxygen in water.
For results validation, an internal calibration system working with a Faraday cell has been developped. This system is based on a standard addition method. A well known quantity of oxygen is produced by electrochemical reaction, and then the produced oxygen content is extracted from water and measured with the analyzer. The validation of results depends on the inter-comparison of experimental and theoretical oxygen content values.

Based on the same principle, Chromatotec® is developing electrochemical gases generators (e.g. H2S, Cl2, O2, H2…). These generators will give the opportunity to reach high level calibration accuracy. Therefore, the whole analytical system accuracy will be improved.

EUROPE – FRANCE
15 Rue d'Artiguelongue
33240 Saint-Antoine
Tel +33 (0) 557 940 626
Fax +33 (0) 557 940 620

NORTH AMERICA – TX
18333 Egret Bay Blvd, Suite 270
Houston TX 77058
Tel +1 (281) 335 4944
Fax +1 (281) 335 4943

ASIA – CHINA
Room 1806, Building 1,
Wanda Plaza, No.93, Jianguo Avenue, Chaoyang District,
Beijing 100022, China
Tel : +86 (0) 105 960 3283