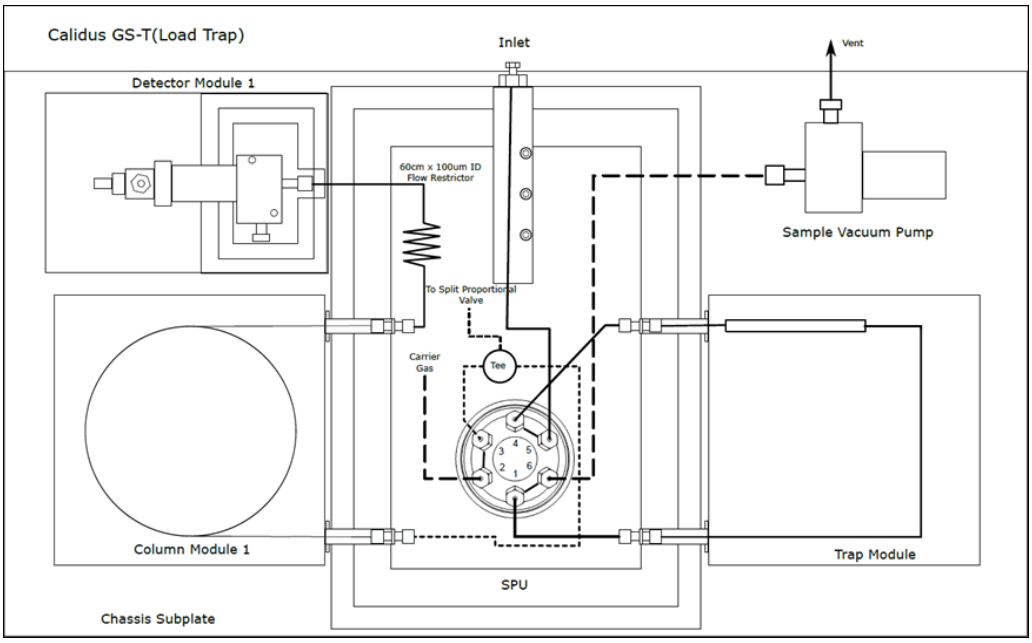
BTEX in Ambient Air

Reference Methods

Falcon Ultra-Fast GC ppb and sub-ppb level BTEX measurements in ambient air.

GC analysis for measuring BTEX and other VOC's in ambient air.

Figure 1: Falcon GC Model Functional Diagram



Application Overview

The sample vacuum pump draws ambient air through the inlet into the Sample Processing Module where it is concentrated onto a Trap Module. The volume of sample loaded onto the trap can be adjusted by changing the vacuum sample pump time specified in the Chromperfect® software. During analysis the trap module is heated rapidly and the sample is passed through the valve and into the Programmed Temperature Column Module (PTCM). A portion of the sample passed from the trap module to the column module is split to vent. This vent may be open or closed, effectively creating a split/splitless injection.

The PTCM is controlled by the method. It contains an MXT-Q Bond Resistively Heated Stainless Steel Plot Column and is operated in a temperature programmed mode.The column provides the separation of the BTEX and other VOC components. (See Figure 2 & 3).

A Flame Ionization Detector (FID) is used for detection of the separated compounds.

Figure 2: Chromatogram of BTEX components at approximately 10 parts per billion

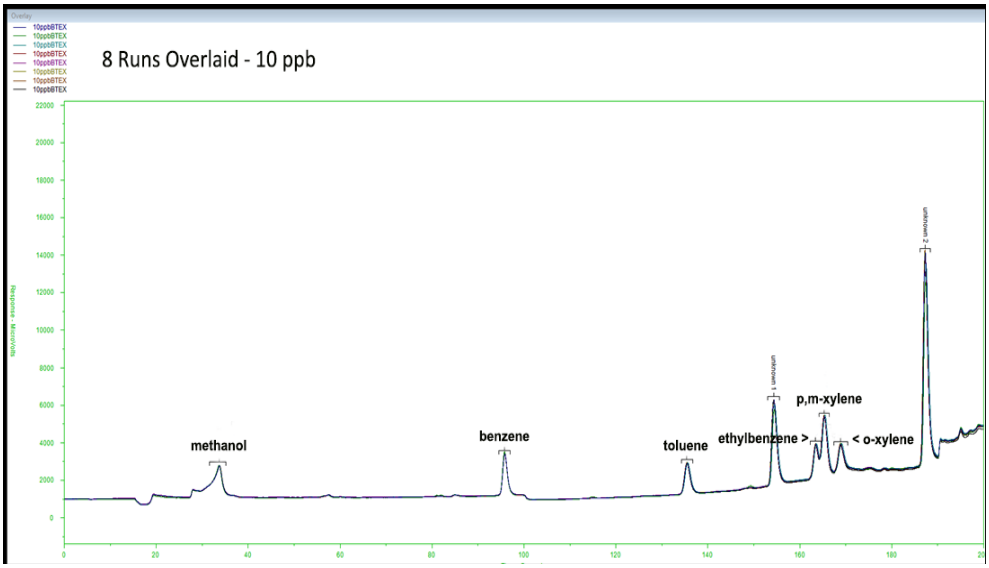
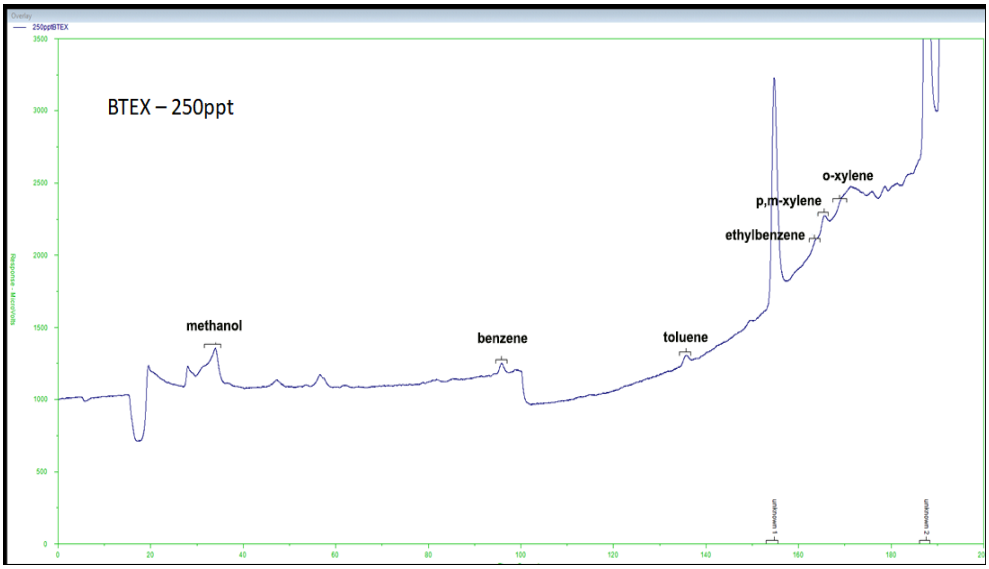


Figure 3: Chromatogram of benzene and toluene at 250 parts per trillion



The analyzer includes the Chromperfect chromatography data system, fully integrated, with InfoMetrix® LineUp™, running on a Windows PC for BTEX detection and quantification at low levels in ambient air.

Implications

Benzene is a known carcinogen and is readily reactive with other compounds in the atmosphere to form smog and other toxic materials. The EPA mandates regulatory practices to help reduce benzene levels in the atmosphere or surrounding areas at chemical plants or other sites where benzene may be utilized/produced. In situations where environmental regulations must be obeyed, the Falcon Ultra-Fast GC may be used for the detection of benzene and other VOCs.

- Simple modular design for the trap and column module as well as a single detector.
    - FID supports hydrocarbon analysis with a LOD of 250ppt OR BETTER. Pulling in more air volume (sample) will achieve higher hydrocarbon concentration on the trap module.
- High precision, accuracy, and repeatability ensure that analyses can be done with higher confidence.
- Smaller footprint means more bench top or analyzer shelter space. In the lab or the plant, space is always at a premium.
- The same unit can be taken out of the lab and into the field to be used as a transportable detector as long as power can be supplied. No changes to the GC are necessary.
- Speed and precision for quicker turnaround.

- Reduction in utility cost (i.e. power and consumables).

Major Analytical Advantages

Quick cycle times with excellent performance and reliability.

Incorporates patented Resistively Heated Stainless Steel Capillary Column Module and its thermal management system, resulting in a paradigm shift in GC analysis.

Sample vacuum pump and trap module are modular in design and housed in the GC chassis along with the column module and detector to make an efficient and easily transportable package.

Area normalization and LineUp can be used to account for sampling anomalies or retention time variance, providing more repeatable data results.

One of the most durable, compact and transportable analytical solutions for low level BTEX analysis (43 cm L X 21.5 cm D X 27.9 cm W, wt. 11.3 kg)

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