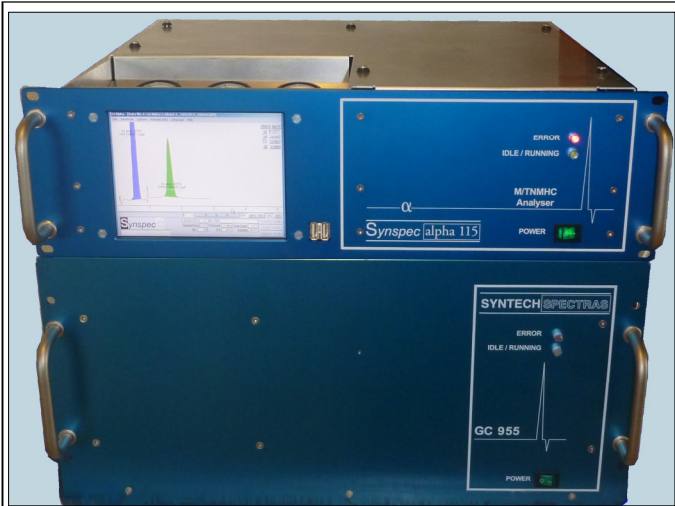


SYNSPEC COMBINED BTEX and M/TNMHC ANALYSER



WHY MONITOR BTEX, METHANE AND TNMHC?

Air pollution requires the monitoring of hydrocarbons. Some hydrocarbons are precursors for ozone, a major environmental problem. Apart from ozone precursors, carcinogenic hydrocarbons are also present in ambient air. The most common of the carcinogens is benzene.

These substances can be measured in two groups in a combined analyser. The groups are:

- benzene, toluene, ethylbenzene and xylenes (BTEX)
- methane and the sum of all other hydrocarbons (TNMHC)

HYDROCARBON SELECTION

Benzene: as the main traffic related carcinogenic hydrocarbon.

Toluene: as one of the main single hydrocarbons responsible for ozone formation.

Ethylbenzene and the xylenes: as being more toxic than toluene and also strong ozone formation precursors.

Methane: on its own already has a concentration of over 1.5 ppm in ambient air. It is one of the major greenhouse gases. Methane is not toxic and not reactive in ozone formation.

TNMHC: the total non methane hydrocarbons should be quantified separately from methane. This is the sum of all hydrocarbons in the ambient air, a useful indicator of hydrocarbon pollution and of ozone formation.

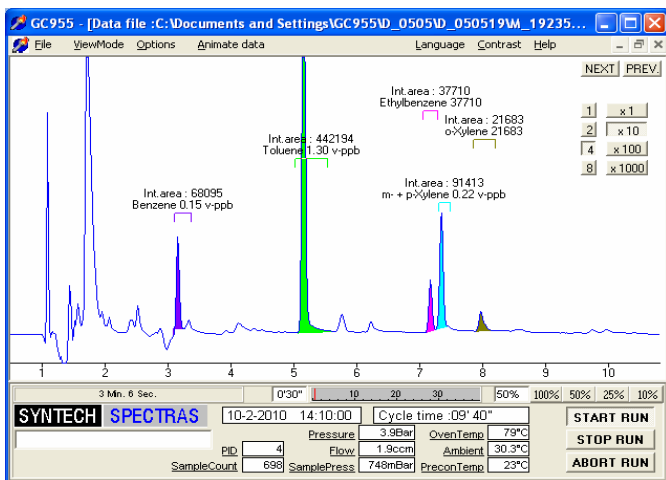
SYNTECH SPECTRAS BTEX AND METHANE/TNMHC ANALYSER

With the new combined option for M/TNMHC and BTEX in one set Syntech offers customers an easy to use and affordable system.

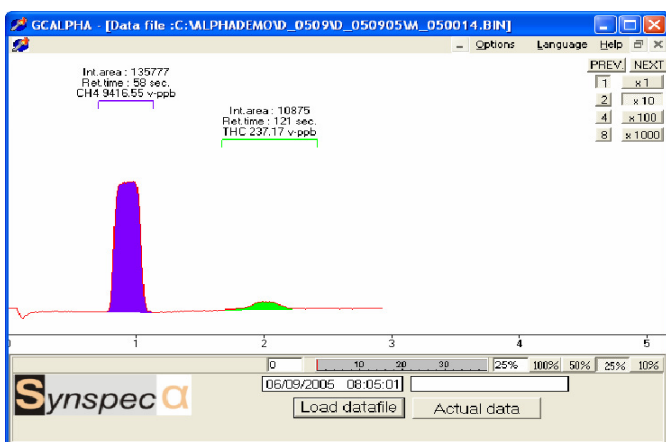
The two parts function separately but only use one computer and one LCD screen. This option is without losing any functionality but is much cheaper than two separate analysers.

The BTEX analyser works with a preconcentration trap that concentrates on Tenax GR an air volume variable between 5 and 400 ml, a capillary column to separate the hydrocarbons and a photo ionization detector.

The M/TNMHC system uses the sample trapped in a loop of 2 ml and does not concentrate the VOC. The column is specially made for this application based on proven technology, the detector is the flame ionization detector.



BTEX measurement



Methane / TNMHC measurement

TECHNICAL DETAILS OF THE COMBINED BTEX AND M/TNMHC ANALYSER

The instrument is a gas chromatograph with a built-in preconcentration system. Hydrocarbons are pre-concentrated on Tenax GR, desorbed thermally and separated on an EPA624 equivalent column, to reach optimal separation from interfering hydrocarbons. Analysis is done by a photo ionisation detector. This ensures a high specific sensitivity for benzene and other aromatic hydrocarbons.

TECHNICAL DETAILS OF THE METHANE/TNMHC ANALYSER:

Measuring principle: The analyser is a real gas chromatograph. It contains a compact oven with a column that separates methane from total non-methane hydrocarbons. The detector is an FID. The gas sample passes through a column with a special layered packing. The methane (CH₄) passes through and is first injected into the detector. One second later, the column is backflushed and all other hydrocarbons pass to the detector. This results in two peaks generated by the FID: a methane and a TNMHC-peak. The system is very easy to use: it has an automatic start-up for the whole system and this means that setting to work is very simple. The FID detector starts very easily, provided the gases used are of good quality. The measuring is a true gas chromatographic separation: we use this to avoid problems with catalytic functioning. As often occurs with systems without the GC column.

A standard industrial PC with Windows, running under XPe is used. One GC contains the PC and uses the internal RS232 connection, the other system is connected externally with one of the RS232 comports.

The user-friendly software stores all the chromatograms on the hard disk and data can be interpreted easily with the intuitive software. Data can also be transferred by network and modem connection. Besides this, analogue and digital output options are available to communicate with other data logging systems using several data protocols.

	601 BENZENE, TOLUENE AND XYLENES IN AIR.	115 METHANE AND TNMHC
General	SERIES 600, cycle time 15 min, temp program 50 - 70 °C	cycle time 3 min, isothermal 70 °C, 10 port valve Synspec loop 2 ml
Detector	PID detector. Lowest detection level for benzene 0.1 µg/m ³ (0.03 vppb).	FID detector. Lowest detection levels: 0.1 ppm for methane, 50 ppb for TNMHC
Column	AT624 15m, 0.32 mm ID, 1.8 µm film	Column with special M/TNMHC packing
Reproducibility	typical <3% at 1 ppb (benzene, with capillary column)	Typical <1% of full scale
Range	Up to 300 ppb	0.1 to 10 ppm up to 0.1 - 1000 ppm for Methane, 0.05 ppm to 100 ppm for TNMHC
Dimensions	19" rack, 5 standard Height Units, depth 39 cm net	19" rack, 3 standard Height Units, depth 42.5 cm net
Consumption of gas	Instrument air: none! Nitrogen: quality 5.0, 4 bar, 6 ml/min	Instrument air: dry and clean, 2.5 bar, 250 ml/min Nitrogen: quality 5.0, 2 to 4 bar, 15 ml/min Hydrogen: quality 5.0, 2.5 bar at 20 ml/min
Power demand	220 V AC, 100 VA (110 V AC available)	220 V AC, 200 VA (110 V AC available)
Included hardware	In a 115/601 combination, shares the computer of the 115. Could be provided with its own computer	Computer Pentium class, harddisk >40 Gb, 6" full colour LCD display, I/O 2 x RS232, 4 x USB, Ethernet, PS2 keyboard/mouse, touchscreen
Included software	WindowsXPe, PC Anywhere host, Synspec gaschromatography package	WindowsXPe, PC Anywhere host, Synspec gaschromatography package
Calibration	External calibration switch optional	Internal calibration switch for calibration with zero and span gas, gas stream required 25 ml at ambient pressure
Communication	Control of instrument: direct control via keyboard or mouse, or via remote host (RS232/Ethernet/modem), data exchange protocols available on demand	Direct control via keyboard or mouse, or via remote host (RS232/Ethernet/modem), or via TCP/IP data exchange protocols available on demand
Certification	CE approval, Approval for EN14662-3, CE approval for EMC conformity: EN 61010-1, EN 61000-6-2 and EN 60111-6-3	CE approval for EMC conformity: EN 61010-1, EN 61000-6-2 and EN 60111-6-3

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