



SYNSPEC DELTA 116 CEMS METHANE / TNMHC ANALYSER

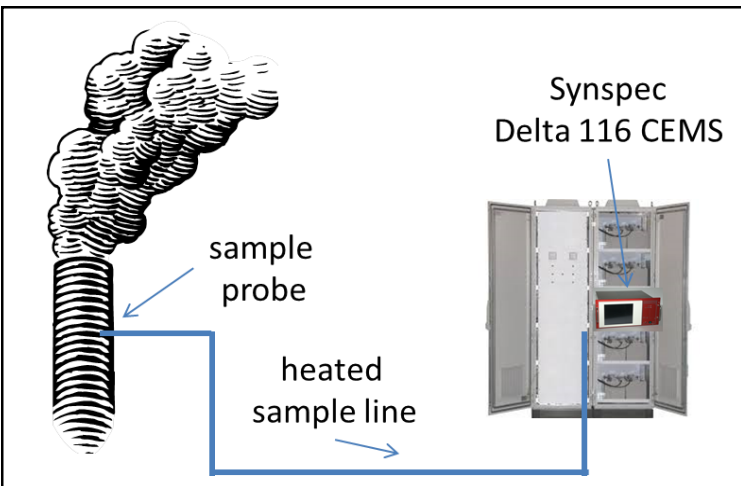


MEASUREMENT OF METHANE (M) AND THE SUM OF ALL OTHER HYDROCARBONS (NMHC) TO DETERMINE THE GENERAL LOAD OF ALL OTHER HYDROCARBONS IN AIR.

Methane and other hydrocarbons are emitted by different sources, such as: nature, industry, traffic and households. Monitoring M/TNMHC continuously allows to quantify the general air pollution by hydrocarbons.

The Synspec Delta 116 CEMS is a complete gas chromatograph. It implies that the methane concentration can be determined separately from the non-methane hydrocarbons and that no interference with other gases occurs.

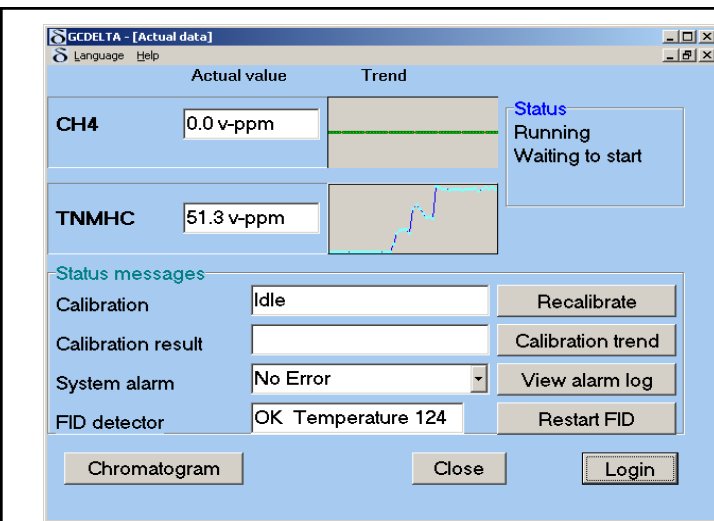
Furthermore, this method covers hydrocarbons that will not be seen by standard GC technology, like oxygenated hydrocarbons.



The **Synspec Delta 116 CEMS analyser** has been designed for stack measurements up to 1000 ppm. All internal sample tubing and the complete FID detector are kept at a temperature of 125°C. This is crucial to prevent condensation and to be able to measure hydrocarbons with a high boiling temperature in a wide concentration range .

The Synspec Delta 116 CEMS analyser has been designed to comply with the **EPA method 25A**:

1. All sampling components leading to the analyser are heated to a temperature ≥ 110 °C
2. FID detector block > 120 °C
3. Recommended heated three-way valve assembly to direct zero/calibration gas to the analyser is available as an option



MEASURING PRINCIPLE:

The analyser contains a compact oven with a column that separates methane from the total non-methane hydrocarbons. Because a gas chromatography column is used, methane and the non-methane hydrocarbons can be measured and identified directly with an FID. No catalytic conversion system is required, which greatly improves the reliability and accuracy of the system.

1. The gas sample passes through a **special layered column**. The **methane (CH₄)** passes through and is first injected into the detector, which generates the first peak in the chromatogram.
2. After detecting methane, the column is **back-flushed** and all other hydrocarbons are fed into the detector. This results in a second peak in the chromatogram.

CARRIER GAS FOR METHANE MEASUREMENTS IN STACK

For the proper running of the Synspec Delta 116 CEMS a good source of methane-free zero air is required to use as carrier gas. Any zero air generator must run with a catalytic methane scrubber at a temperature of at least 400°C.

An alternative is to use nitrogen as carrier gas and the zero air only for the detector air supply.

SYNSPEC DELTA 116 CEMS Methane/TNMHC ANALYSER

DETECTOR

FID, heated to 125°C

GAS CONSUMPTION

Zero air, quality 5.0, dry and clean, **methane-free**, 3.0 bar, 400 ml/min

Hydrogen, quality 5.0, 3.5 bar, 30 ml/min

If the zero air may contain methane, use nitrogen, quality 5.0, 3.0 bar, 20 ml/min, as carrier gas is advised

RANGE

With a loop volume of 500 µl: 1 – 200 ppm methane, 5 – 1000 ppm-C TNMHC

With a loop volume of 250 µl: 10 – 2000 ppm methane, 50 – 10000 ppm-C TNMHC

REPEATIBILITY

<1% of FS

SPAN DRIFT

<2% of FS in 24 hrs

LINEARITY

<1% of FS

HARDWARE AND COMMUNICATION OPTIONS

INCLUDED

x86 based computer, hard disk, 10.1" full colour touch screen

HARDWARE

INCLUDED

Windows Embedded standard, GC Software

SOFTWARE

CONTROL OF SYSTEM

Direct control by touchscreen, keyboard or mouse

External control by RS232, TCP-IP and digital inputs (0-5V TTL)

GC SPECIFICATIONS

Column cage with special application column, 10 port valve

SAMPLE SYSTEM

Loop 250 µL or 500 µL automatic filled by a high quality membrane pump

CALIBRATION

Option: heated valve for switching between sample and span gas at ambient pressure

PHYSICAL DATA

DIMENSIONS

19" rack, 5 standard Height Units, depth 39cm net. (WxDxH = 48.5 x 43.0 x 22.0 cm) weight = 19 Kg

POWER DEMAND

230 Vac, 100 VA (115 Vac available)

CONDITIONS

5 TO 40°C, 20 TO 95% Rh

GENERAL

COMPLIANCE

Designed to comply with EPA sampling method 25A

Analog outputs, 0-10 Vdc or 4-20 mA (selectable)

DATA

COMMUNICATION

RS-232 and TCP-IP

Standard available protocols: ASCII-terminal, Hessen, Gesytec and MODBUS, other protocols on demand

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