Application Note

TELEDYNE
ADVANCED MONITORING SOLUTIONS
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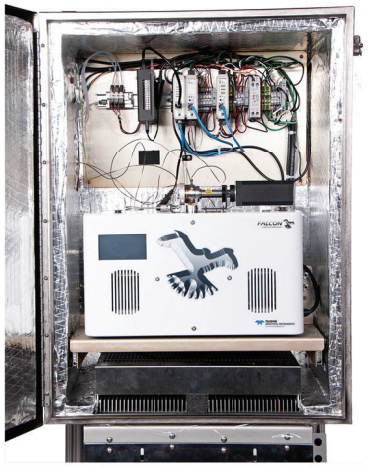
Extended Natural Gas

Reference Methods

GPA 2261, 2286



Extended Natural Gas Application

GC analysis for extended Natural Gas, i.e. fixed gases and C_1-C_{12} hydrograbons for laboratory, at-line, transportable or on-line, in less than six minutes.

Application Overview

The Sample Processing Module with a standard split/splitless injection port and a heated gas sample valve delivers the sample to a comumn switching valve for analysis on two independent Programmed Temperature Column Modules (PTCM). The inlet includes septum purge to provent bleed components from entering the system.

The two PTCMs are independently controlled by the method.

PTCM 1 contains a MXT-QBond resistively heated stainless steel capillary column and is operated in a temperature programmed mode. This column provides separation of CO_2 and C_1-C_{12}. (See Figures 1 and 2).

PTCM 2 contains a MXT-MS5 resistively heated stainless steel capillary column and is operated in a delayed temperature programmed mode. This column provides separation of CO_2, O_2, N_2, C_1 and CO (See Figures 3 and 4 on the back)

Figure 1: PTCM 1 MXT-QBond Separation of CO_2 & C_1-C_{12}

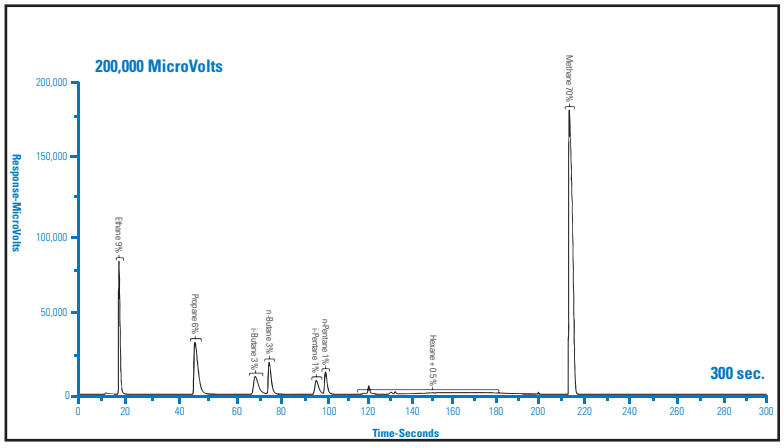
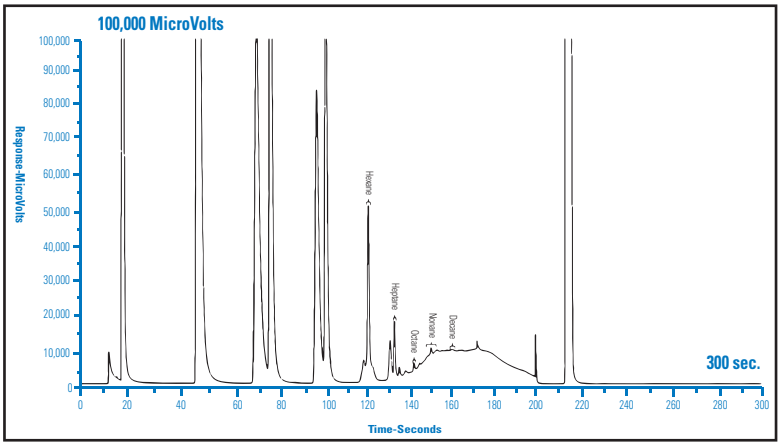


Figure 2: PTCM 1 MXT-QBond Separation of CO_2 & C_1-C_{12}(zoomed)



Extended Natural Gas

Figure 3: PTCM 2 MXT-MS5A Natural Gas Standard

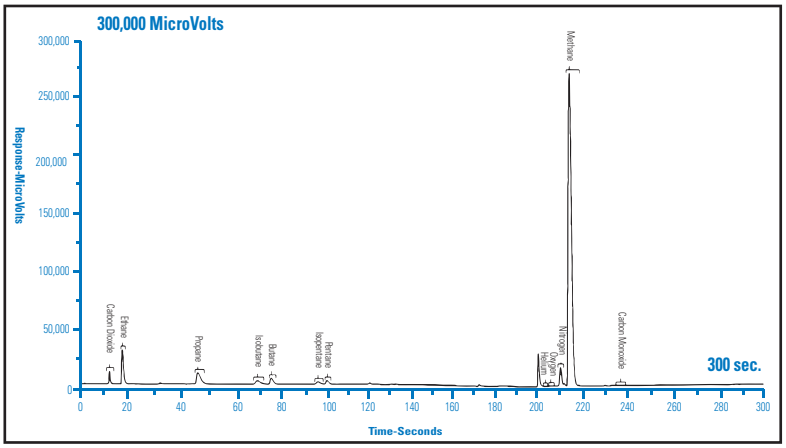
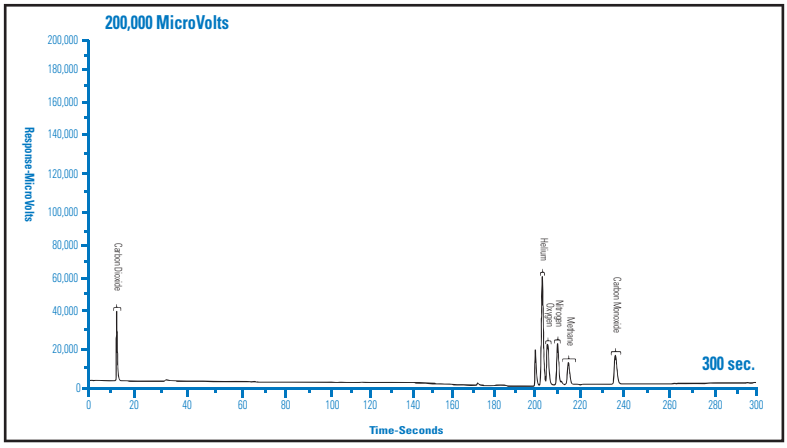


Figure 4: PTCM 2 MXT-MS5A Permanent Gas Standard (Sepaeration of CO_2, O_2, N_2, C_1 and CO)



Implications

In the natural gas industry, price is dictated by the energy content; therefore, the ability to determine the energy content within the sample stream is of utmost importance.

- Parallel analysis utilizing FID and TCD
  - -FID supports hydrogarbon analysis
  - -TCD supports permanent gas analysis
- Ideal for "dry" gas, "wet" gas, "frac" gas or any gas where condensates may be present.
- A complete range of natural gas analysis in one instrument, in the laboratory, at-line or in the field
- Enables greater product throughput for increased revenues and profits
- Smaller footprint means more bench top or analyzer shelter space. In the lab or the plant, space is always at a premium
- Speed and precision for quicker turnaround
- Reduction in utility and maintenance cost (i.e. power and consumables)

Major Analytical Advantages

- Fastest analysis time in the industry for Extended Natural Gas, 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 anlaysis
- Simplest hardware analytical approach for achieving Extended Natural Gas analysis
- The most powerful, durable, compact and lightweight analytical solution for Extended Natural Gas analysis

Specifications

Detector	Flame Ionization Detector, 4 meter column
Configuration	Direct liquid injection or process analysis with liquid sampling valve (LSV)
Utilities	UHP hydrogen carrier and FID fuel and zero air (99.999% pure)
Wattage	300 Watts (maximum)
Dimensions	17"W x 11"H x 8.5"W (43 x 22 x 28 cm) Approximately 25 lbs (11 kg)

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