

REFERENCE METHODS

GPA 2261, 2286

CALIDUS™ CS UltraFast GC

Extended Natural Gas application

GC analysis for extended Natural Gas, i.e. fixed gases and C₁-C₁₂ hydrocarbons for laboratory, at-line, transportable, or on-line, in less than six minutes

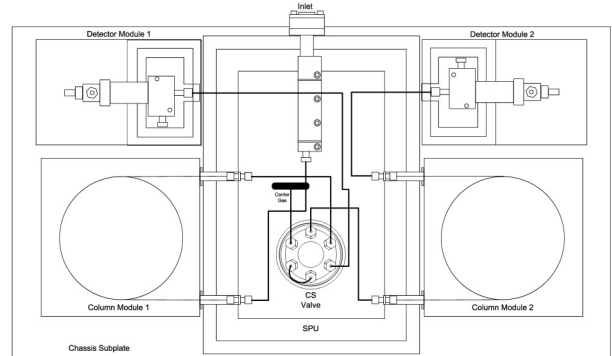
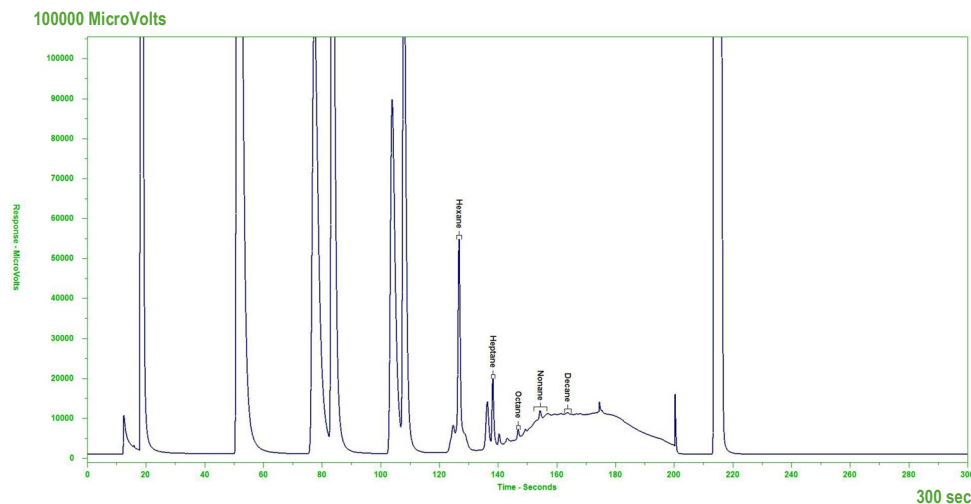
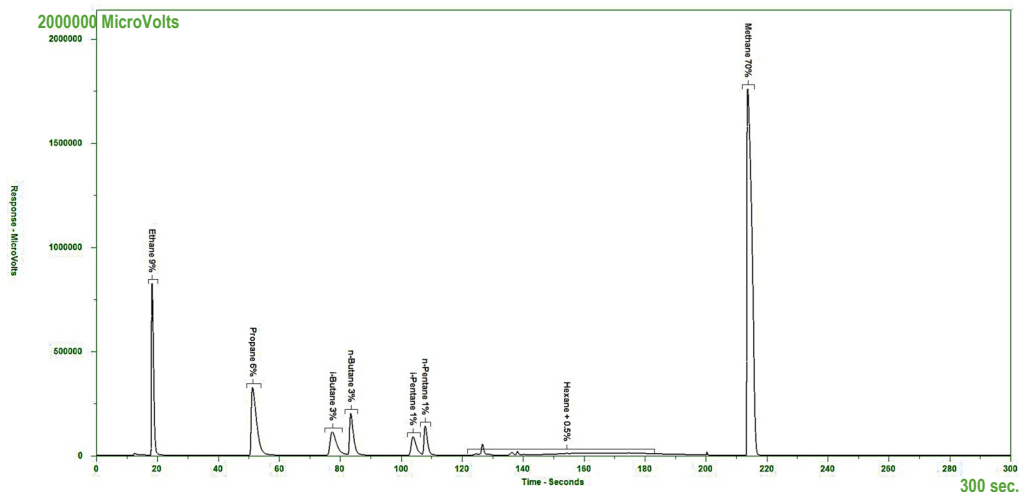


Figure 1: CALIDUS CS Functional Diagram

APPLICATION OVERVIEW

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

Figure 2A: PTCM 1 MXT-QBond Separation of CO₂ & C₁-C₁₂



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 CO₂ and C₁-C₁₂. (See Figures 2A & 2B)

Figure 2B: PTCM 1 MXT-QBond Separation of CO₂ & C₁-C₁₂ (zoomed)

EXTENDED NATURAL GAS

PTCM 2 contains a MXT-MS5A resistively heated stainless steel capillary column and is operated in a delayed temperature programmed mode. This column provides separation of CO₂, O₂, N₂, C₁, and CO. (See Figure 3)

The analyzer includes the Chromperfect® chromatography data system, fully integrated, with InfoMetrix® LineUp™, running on a Windows PC for calculating and reporting BTU content as well as other physical properties such as specific gravity and compressibility.

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 hydrocarbon 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, online, 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 analysis.

Simplest hardware analytical approach for achieving Extended Natural Gas analysis.

The most powerful, durable, compact and lightweight analytical solution for Extended Natural Gas analysis (43 cm L X 21.5 cm D X 27.9 cm W, wt. 9.07 kg).

Figure 3: PTCM 2 MXT-MS5A Natural Gas Standard

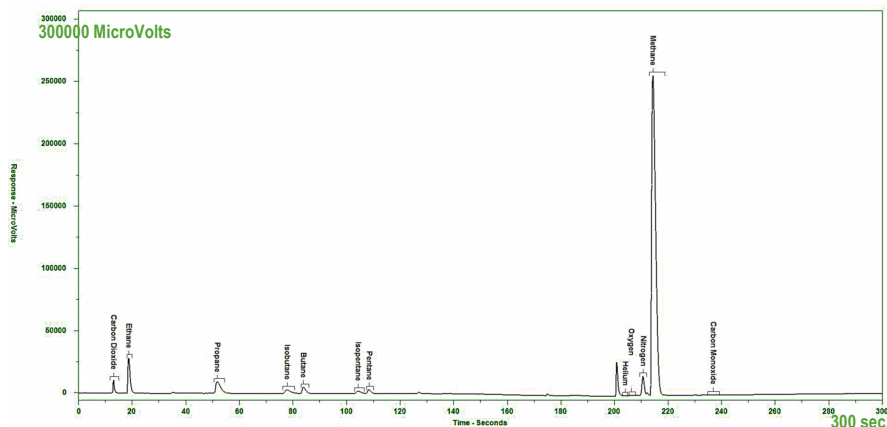


Figure 4: PTCM 2 MXT-MS5A Permanent Gas Standard (Separation of CO₂, O₂, N₂, C₁, and CO)

