Varian 450-GC CO/CO_2 Analyzer

FOR THE ANALYSIS OF CO AND CO_2 IN VARIOUS GASEOUS MATRICES

The Varian 450-GC CO/CO_2 Analyzer is designed for the analysis of carbon monoxide, methane and carbon dioxide in gas mixtures. Different configurations provide accurate and reliable trace analysis, with detection limits down to low ppb levels.

Varian offers a wide range of instruments for applications in the oil and gas industry. Our single vendor approach carefully integrates the latest hardware, software and column technologies, as exemplified by the Varian 450-GC CO/CO_2 Analyzer.

Key Benefits

- **Detection limits down to 10 ppb or 100 ppm cover most applications.** Two configurations are available, both fully factory-tuned and tested for low-level analysis of carbon monoxide, carbon dioxide and methane.
- **Easy to operate, and automated for walk-away operation.** Varian's 450-GC with Galaxie™ chromatography data handling software provides a powerful analysis combination and does not require a high degree of skill to be used successfully.
- **Operational procedures fully documented for regulatory compliance.** Varian's CO/CO_2 Analyzer not only incorporates proven GC hardware and software, but is also pre-loaded with analysis method(s) and documentation specific to the application.
- **Based on proven hardware and column technology for reliability.** The Varian CO/CO_2 Analyzer incorporates Varian's popular 450-GC, Galaxie data handing software and proven column technology in a system that is very powerful but extremely easy to use.
- **Electronic Flow Control provides accuracy and convenience.** Varian's state of the art electronic flow control units in combination with Galaxie GC control, provide unsurpassed performance, precision and ease of use.

Varian 450-GC CO/CO_2 Analyzer

Through the use of advanced column technology this analyzer separates CO, CH_4 and CO_2 from gaseous hydrocarbon matrices. The system is specially suited for sub-ppm levels of these gases in matrices such as ethylene or propylene, as well as trace level analysis of components in pure gases such as hydrogen, helium and nitrogen. Various sample loops are available to match different concentration levels and application needs.

To further enhance detection limits, a second configuration is available. In this case, the sample loop is enlarged to 10 mL and a different column set is used. This set-up delivers a detection limit of low ppb CO in hydrocarbon mixtures.

The Varian 450-GC CO/CO_2 Analyzer is easy to operate and fully automated. Operational parameters, including gas flows, are factory tuned and set, and the complete chromatographic configuration is stored so that methods are easily repeatable.

Specifications

Applicability: The determination of trace levels of carbon monoxide, methane and carbon dioxide in mixtures of gases. The instrument is specially suited for sub-ppm/low-ppb levels of CO, CH_4 and CO_2 in hydrocarbon matrices such as ethylene and propylene.

External requirements: The sample must be gas at room temperature with a maximum pressure of 3 bar. Excess pressure must be reduced.

Analysis time: Approximately 15 min.

Minimum detectability: The minimum detection level is better than 10 ppb for hydrocarbon type matrices and 100 ppm for pure gases such as helium and nitrogen; configuration dependent.

Dynamic range: Between 10 ppb and 0.05% in everyday use.

Accuracy: The analyzer is calibrated using external calibration and so the accuracy is related to the accuracy of the calibration sample and the repeatability of the analyzer.

Repeatability: Better than 1% relative standard deviation at the 50 ppm concentration level, measured over 20 consecutive runs.

Hardware configuration:

- Single channel, multi-dimensional, packed column configuration, based on the Varian 450-GC
- Injection via gas sampling valve
- Detection using methanizer and FID in series
- Various sample loops

The chromatogram shows the type of results the Analyzer delivers for a typical analysis of carbon monoxide, carbon dioxide and methane in propane.

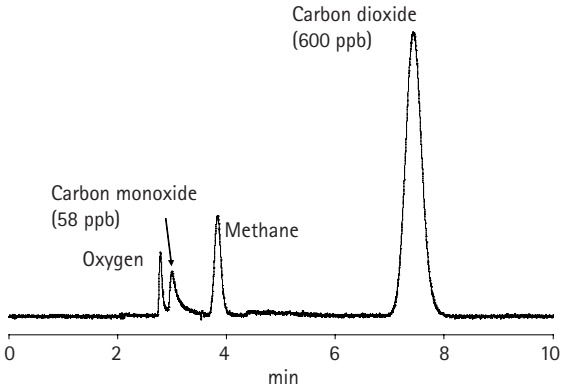

Figure 1: The presence of CO_2, CH_4 and CO_2 in a propane sample revealed by the Varian 450-GC CO/CO_2 Analyzer.

VARIAN

Varian, Inc.
www.varianinc.com
North America: 800.926.3000, 925.939.2400
Europe The Netherlands: 31.118.67.1000
Asia Pacific Australia: 613.9560.7133
Latin America Brazil: 55.11.3238.0400

Other sales offices and dealers throughout the world–check our Web site.

SI-02092/A/4.09 Printed in the UK