

Parallel GC for Complete Refinery Gas Analysis

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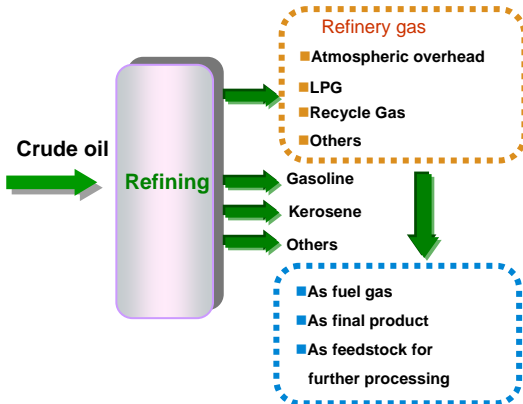


Abstract

The Agilent 7890A GC supports an optional third detector (TCD), allowing simultaneous detection across three channels. This provides a complete analysis of refinery gas analysis, including permanent gases and hydrocarbons to n-C₆ with one injection. The total run time is less than 6 minutes.

Introduction

What is Refinery Gas?



Refinery Gas Analysis and Its Challenges

Refinery gas is a mixture of various gas streams produced in refinery processes. Its composition is very complex, typically containing hydrocarbons, permanent gases, sulfur compounds and so on. An exact and fast analysis of the components is essential for optimizing refinery processes and controlling product quality.

Agilent's New Fast RGA Solution Highlights



One 7890A GC configured with three parallel channels with simultaneous detection provides a comprehensive, fast, and high-resolution analysis of refinery gas with one injection in six minutes



Use of optimized columns allows faster analysis of hydrocarbon and permanent gases with the same oven temperature program



A third TCD and use of nitrogen carrier gas improves hydrogen detection and linearity



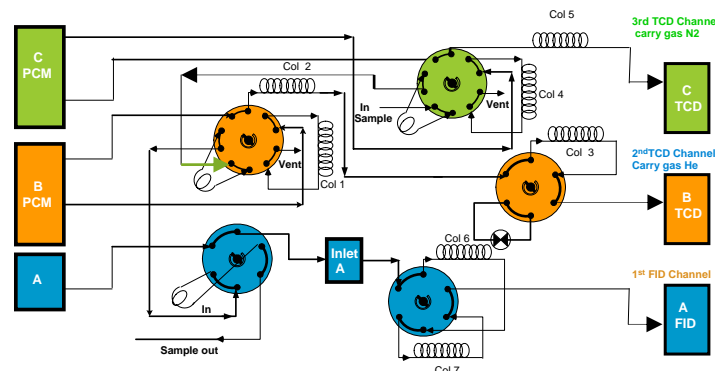
New, easy-to-use tubing connectors based on Capillary Flow Technology are used to connect valves and capillary columns to improve chromatographic performance including peak shape



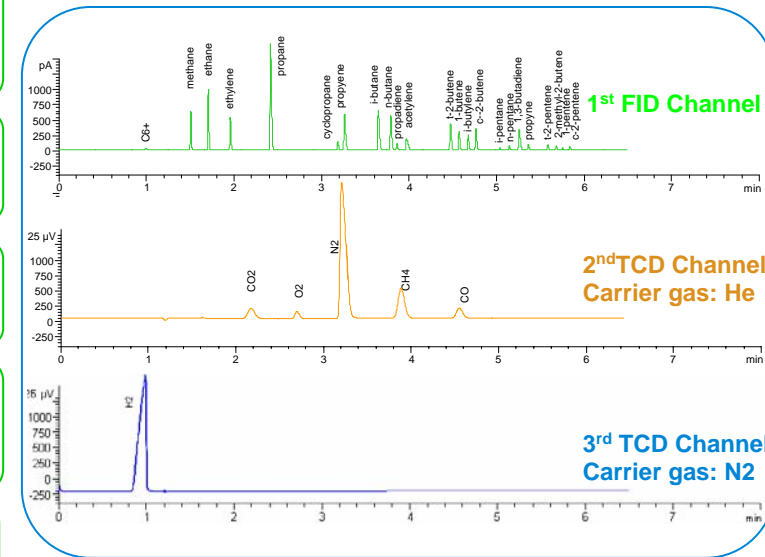
Macro program automatically provides calculation of gas properties; Reports can be generated using formulas given in the ASTM/GPA and/ or ISO standards

Experimental

Configuration



Results



Summary and Conclusions

- Parallel GC configuration, 3 detectors simultaneous detection
- Complete analysis of permanent gases, including N₂, H₂, O₂, CO, CO₂ and all hydrocarbons up to n-C₆ in 6 minutes
- Macro program provides automated calculation of gas properties and gives a report in either Mole%, Weight%, Volume%, or any combination of the three
- Suitable for analysis of a broad range of gas samples
- Meets requirements of ASTM D 1945, ASTM D1946 and UOP 539 methods
- Excellent sensitivity and repeatability