GASMET™ in research – applications:

Engine Emissions Measurements

Engine development

A combustion engine exhaust gas is a complex mixture of gases and particulate matter that changes in composition very rapidly. Multicomponent analysis of exhaust gases can be performed with a GasmetTM FTIR analyzer with a response time (T90) of one second. This is achieved with the combination of a small volume sample cell, powerful sample pump and fast liquid nitrogen cooled detector. The analyzer, sampling system and computer can be assembled on a cart for use in a dynamometer laboratory, or the portable version can be used for roadside tests.

Typical analyzed components (up to 50) : ·

- H2O, CO, CO2, NO, NO2, SO2, HCl, NH3, HNCO ·
- speciated hydrocarbons up to C8 ·
- Benzene, Toluene, Ethylbenzene, Xylenes (BTEX) ·
- VOC's such as alcohols, aldehydes, MTBE

Typical System Configurations Stationary Engine Exhaust Analysis System

- GasmetTM Cr-2000 gas analyzer with LN2 detector and fast response sample cell
- GasmetTM Sampling System
- Heated Filter Unit
- GasmetTM Industrial Computer.

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Typical Application:

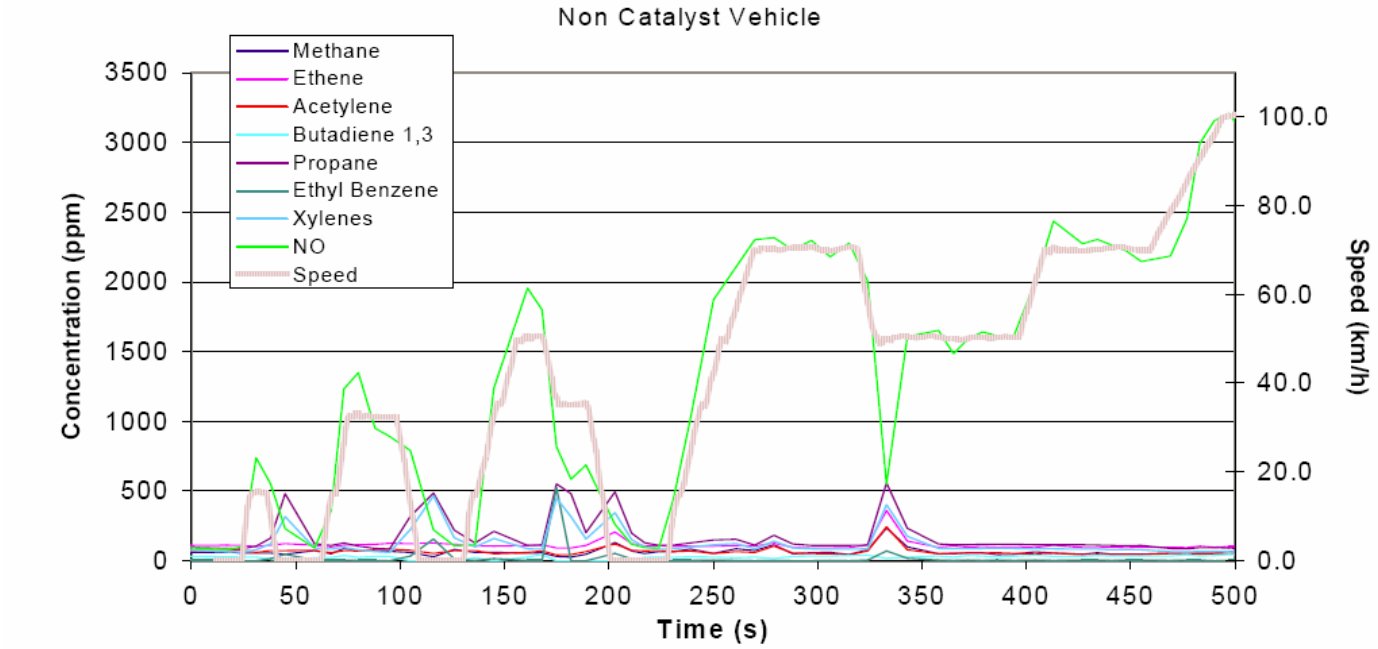


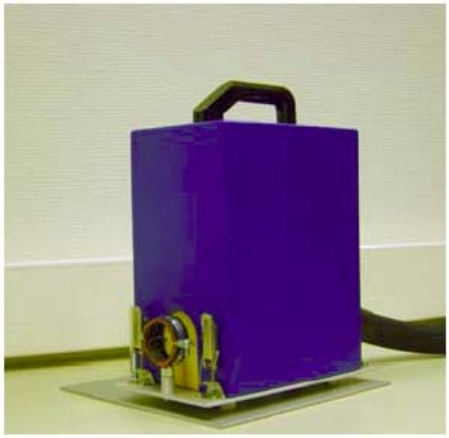
Figure 1. Nitrogen Oxide, Hydrocarbons and Aromatics from a moving vehicle together with vehicle speed.

Diesel or Gasoline internal combustion engine, on-board measurement in moving vehicle or in a research facility on dynamometer rolls.

Results of interest: NO, NO2, NH3, hydrocarbons and VOC's as separate components

The analysis software is capable of incorporating up to 8 analog input signals such as vehicle speed, engine rpm, and various temperatures to the analysis results

Engine exhaust can contain fine particles and unburned fuel. Heated (up to 320 OC) glass wool filter is used to remove particles and prevent condensation. All parts in contact with the sample gas are heated to at least 180OC. The sampling system has a powerful sample pump (15 l/min) and a heated back-up filter. The system is fully automated and suitable for continuous measurement. It is also equipped with several safety features to prevent sample condensation inside the cell.



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