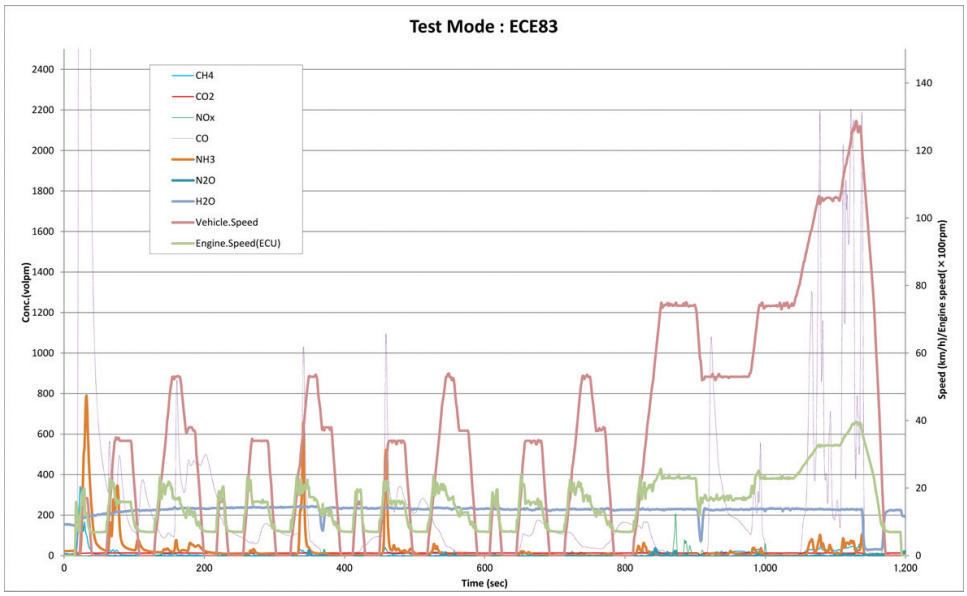
Accurate emissions testing

Real-world vehicle exhaust analysis based on Fourier transform infrared technology is enabling powertrain engineers to reap many rewards when it comes to testing accuracy

The simultaneous reduction of particulate and NOx emissions is required in order to fulfill today's emissions regulations and those of the future. Particulate emissions are reduced by the utilization of diesel oxidation catalysts and diesel particulate filters. Both systems convert NO to NO_2. This may significantly influence the SCR (DeNOx) catalyst, which is used to minimize NOx emissions.

For many years, test labs have used systems based on Fourier transform infrared (FTIR) technology for catalyst development, which correlate very well with conventional analyzer systems. However, these systems fall short because they can only be used in the test cell environment, although testing under real-world conditions is becoming more and more important. Portable emissions measurement systems (PEMS) provide limited accuracy at low emission levels and are not capable of measuring ammonia (NH_3) and nitrous oxide (N_2O).

A&D Technology's BOB-1000FT, a multicomponent gas analyzer system that is based on FTIR technology, overcomes this hurdle and finally allows for highly accurate emissions testing even at today's low concentration levels. The system has been designed for the continuous measurement of undiluted vehicle exhaust. It allows for the simultaneous measurement of more than 30 gases including the differentiated hydrocarbons, NO, NO_2, NH_3, CO, CO_2, CH_4, alcohol, and carbonyls. All gases are measured in one sample point with a sample rate of up to 5Hz. A fast response time (<1.5 sec) is achieved by operating the system under a vacuum pressure, and the BOB-1000FT includes cross-interference compensation to insure that measurements are not forged by the cross-interference between gases.



A&D's BOB-1000FT gas analyzer has been developed for the continuous measurement of undiluted vehicle exhaust. The system is easy to use and ensures highly accurate emissions testing cycles

The vibration dampening system effectively handles the vibrations that are caused by the road conditions, ensuring the accuracy and validity of the measurements during the road test. In case the system needs to be used in a test cell, the components can be easily installed in a specially designed roll-around cabinet. This increases the versatility of the equipment, and because the same gas analyzer system can be used, it is ideal for correlation testing that compares real-world results with those obtained in the test cell environment.

In addition, the system offers optimized gas analysis methods for the different fuel types, including gasoline, diesel, CNG, and other alternative fuels. GPS, OBDII, and weather data can be easily integrated. Video data that has been collected during the test can be time-aligned with the measured emissions data, giving the engineer a valuable tool to better understand the results.

A&D's acclaimed system offers optimized gas analysis methods for many different fuel types

The optional high-altitude pressure control system also enables testing at altitudes up to 4,000m.

With the BOB-1000FT, A&D Technology is introducing a new generation of PEMS that meets today's and future requirements for highly accurate, real-world emissions testing.

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