



INSTRUMENTS
CHROMATOGRAPHIC SOLUTIONS

PLASMADETEK ON AGILENT 7890 A

APPLICATION SUMMARY

As part of a research project for measuring greenhouse gases in France, more precisely for the N2O and CO2 for multiple soil sample analysis having a wide range of concentrations, the use of the PlasmaDetek2 (PED) detector and the Agilent 7890 GC combined with the Headspace 111 auto sampler system have been used in this proposed solution.

CHALLENGE OF THE APPLICATION

The samples from different locations come in 40ml vials. More than 4000 samples have to be analyzed per campaign. The samples contain CO2 concentrations ranging from 500ppm up to 80% and N2O concentration from 300ppb up to 5000ppm. The system of detection must be able to cover each sample within 15 minute cycle time. Low and high concentrations are analyzed with the same system.

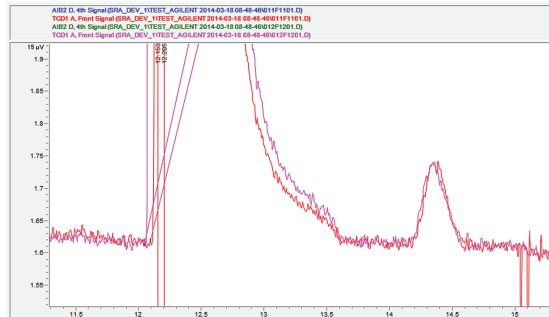
SOLUTION

System implementation comprises a Headspace setter 111 positions coupled to an Agilent 7890 gas chromatograph (GC) equipped with purged valves and connected to two types of detectors, one TCD for high levels of CO2 in particular, and a PED (PlasmaDetek2 from LDetek) for traces of N2O. The advantage of this notorious PED detector with respect to ECD detector, frequently encountered in this application, is the absence of radioactive source subject to a heavy administrative procedure and staff empowerment. The presence of these two sensors in the same instrument, allows analysis and quantification of high levels of CO2 and very low levels of N2O.

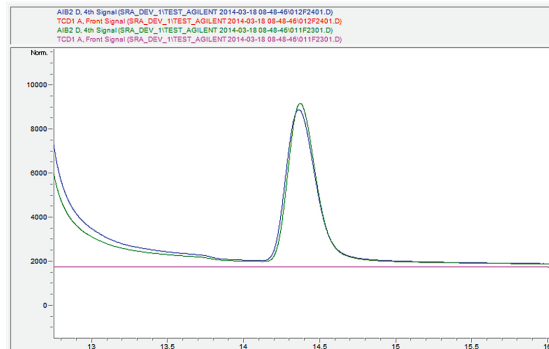
SYSTEM PICTURE



RESULTS



Chromatogram showing 80% CO2 and 40ppm N2O using TCD channel. This channel gives the ability to measure high concentration CO2.



Chromatogram showing 40ppm N2O using PED (PlasmaDetek2) channel. This channel is used for measuring low concentration N2O.

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