

Gasmeter™ in process monitoring – applications: Semiconductor Manufacturing

The process:

Various PFC (Poly Fluorinated Carbon) compounds are used in semiconductor fiber manufacturing processes. The exhaust gases are typically scrubbed before they are directed into outlet vent.

Measurement need:

- Emissions measurements.
- Scrubber efficiency tests.

Typical measured compounds:

- Poly fluorinated carbons: CF₄, CHF₃, C₂F₆
- Sulphuric compounds SF₆
- Others SiF₄, NH₃, NF₃

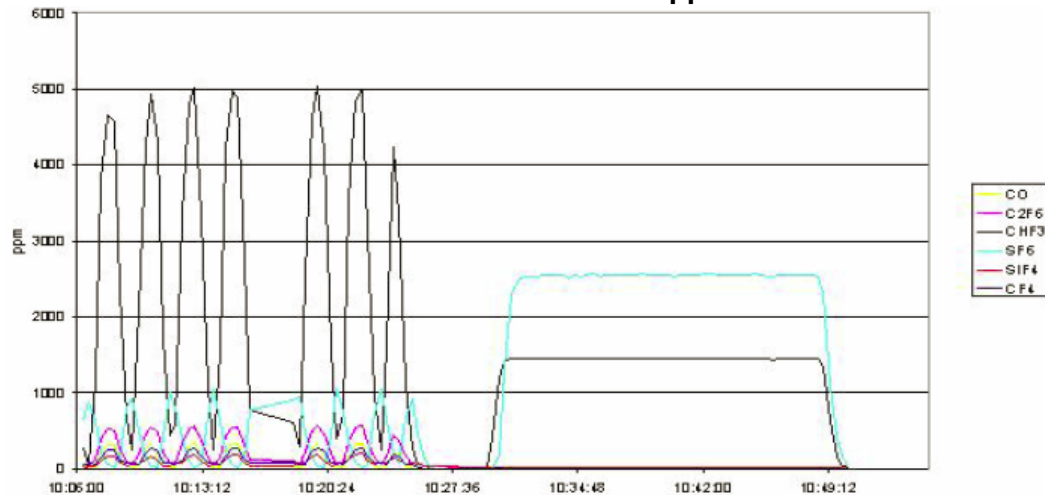
Hot extractive sampling ensures reliable results for water soluble & reactive components. All parts that are in contact with the sample gas are heated to 180 °C. The system also has a number of built-in safety features; in the unlikely event of a temperature drop or a power loss, the sampling automatically stops and system is flushed with zero gas

The Gasmeter CR system is designed for fast 20 second measurements in the Parts Per Billion (PPB) range. A liquid nitrogen cooled MCT detector along with 1 wavenumber high resolution provides 10 measured spectra per second with extremely low noise levels.



Gasmeter™ CR System on Cart

Application Data



Measurements from oxide etching process of wafers. Short response time of Gasmeter™ is necessary to see the fast changing concentrations in different phases of cyclic process.

The Gasmeter™ DX system is designed for portability and provides measurements in the low Parts Per Million (PPM) range. The system is comprised of a heated sample probe, heated sample line, Portable Sampling System with heated filter and temperature controllers, heated analyzer line and Gasmeter DX-4000 FTIR gas analyzer. Operation of the system is by customer supplied computer running Calcmet software provided with the system.



CASE STUDY

The example below shows a measurement of C_3F_8 , CF_4 , COF_2 and SiF_4 made with the GASMETER™ Dx-4000 FTIR Gas Analyzer. The measurement time is 20 seconds and the sample gas was diluted with the Ansyco dilution probe. The conditions of the chip production process were varied during the test measurements in order to make the process optimization possible. Different process conditions result in different halide concentrations.

