GAS ANALYSIS

DryPath™ option for OMEGA 5

Quantification of low H_2O and CO_2 concentrations without the need for an external purge gas

Innovation with Integrity

Quantification of H_2O and CO_2 in the low ppm range

For the FT-IR-based quantification of gaseous H_2O and CO_2 in the ppm range, a low and a stable concentration of these compounds in the optics compartment of the spectrometer is crucial.

Under typical lab conditions, there are usually around 8000 – 15000 ppm H_2O and about 400 – 500 ppm CO_2 present in the ambient air, i.e., air surrounding the spectrometer. The concentrations of these compounds are in most cases not stable but fluctuating with time. This is particularly true if the air condition is turned on or off or if people enter the lab or a window is opened or closed. Even people breathing near the spectrometer can cause dramatic changes in detectable CO_2 and H_2O.

To keep the concentrations of H_2O and CO_2 in the optics compartment low and stable, it is therefore important to decouple the spectrometer from these fluctuations by sealing the instrument well and by purging its optics compartment with dried and CO_2-free purge gas.

Sealed and purgeable optics compartment of the OMEGA 5

The Gas Analyzer OMEGA 5 is well sealed against ambient air such that low concentrations of H_2O and CO_2 can be quantified when purging the optics compartment with a recommended gas flow of about 1 l/min.

But if no dried and CO_2-free purge gas is available at the measurement site, a combination of a compressor and air dryer would be required to purge the Gas Analyzer. This can lead to significant additional costs for purchase as well as for maintenance. Alternatively, N_2 from gas bottles could be used, which would also lead to additional costs, time, and efforts to handle these bottles.

DryPath™ for OMEGA 5: No need for purge gas

When the OMEGA 5 is equipped with the DryPath™ option, an internal purge function and a DryPath™ filter are installed to keep the optics compartment dry and CO_2-free. Thereby, the background concentrations of H_2O and CO_2 are automatically kept at a minimum and constant level without the need for an external purge gas. This leads to quantification limits in the single-digit ppm range.

DryPath™: Easy to use

If the DryPath™ option is ordered, this option is fully integrated into the OMEGA 5 during the production process. Additional installation steps on site are not required. Whenever the OMEGA 5 gas analyzer is switched on, the optics compartment of the FT-IR spectrometer is purged automatically. This enables the measurement of H_2O and CO_2 at low concentrations as well as the analysis of potentially overlapping gas compounds.

The DryPath™ filter that is used for the DryPath™ option must be replaced on a regular basis to ensure a constant low level of H_2O and CO_2 in the optics compartment of the spectrometer. The typical lifetime of a DryPath™ filter is at least 1 year and depends on the operating time and ambient conditions (like humidity, temperature, or pressure fluctuations). The filter can be replaced easily by the user within a few minutes.

DryPath™

- Enables the measurement of H_2O and CO_2 in the single-digit ppm range without the need for an external purge gas
- Background volume fraction of optics compartment < 10 ppm H_2O and/or < 1 ppm CO_2
- Stability of measured value for zero air is better than 1 ppm H_2O, at 50% relative humidity (25°C, 1013mbar) and/or 0.1 ppm CO_2 at 400 to 1000 ppm (25°C and 1013 mbar).
- Lifetime of filter is about 1 year when operated 24/7
- DryPath™ filter can be easily replaced by the user
- Can only be ordered with initial system purchase

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Bruker Optics is ISO 9001, ISO 13485, ISO 14001 and ISO 50001 certified.