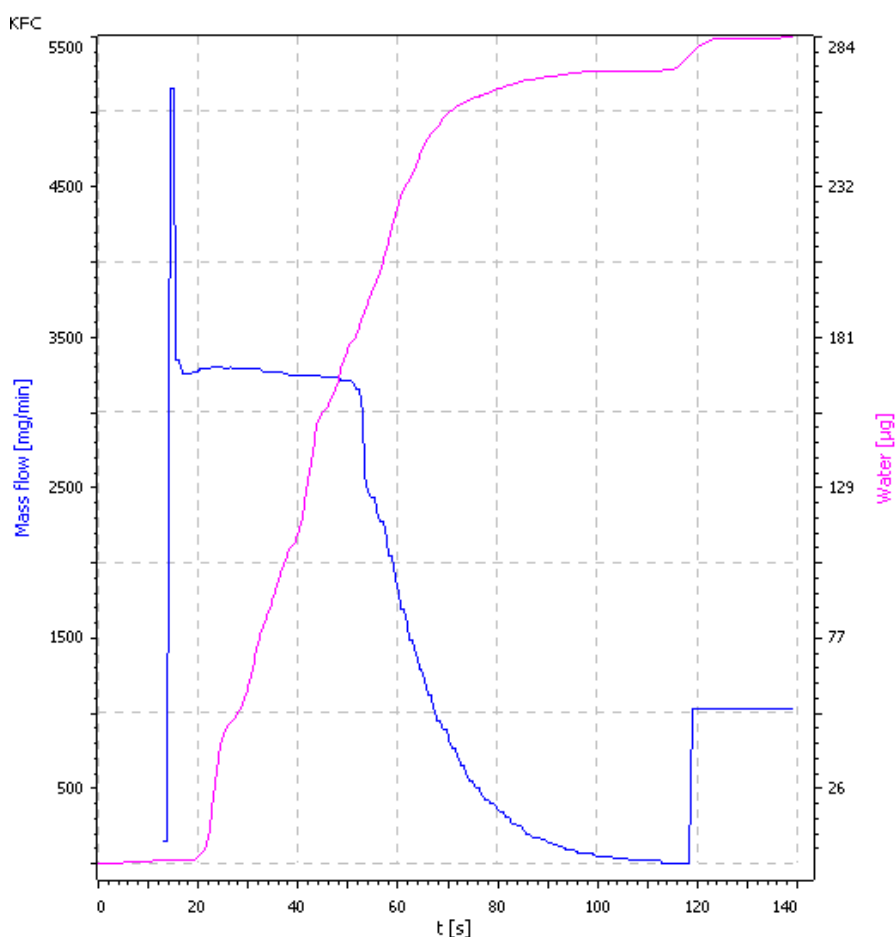


Water content in carbon dioxide using Karl Fischer titration



This Application Note describes the automated determination of the water content in CO₂ using a modified 875 KF Gas Analyzer.

Method description

Sample

CO₂

Sample preparation

The sample cylinder is connected to the 875 KF Gas Analyzer with a PEEK capillary with 0.5 mm inner diameter. The capillary is used for the calibration as well as for the measurement. The sample is taken from the liquid phase of the sample cylinder.

Electrodes

Double Pt Electrode	6.0344.100
Generator electrode with diaphragm	6.0341.100

Reagents

HYDRANAL®-Coulomat AG-Oven	Fluka 34739
HYDRANAL®-Coulomat CG	Fluka 34840
Nitrogen 5.0 (>99.999, <3 ppm H ₂ O)	Carbagas

Instruments

875 KF Gas Analyzer	2.875.9020
PEEK capillary 30 cm 0.18 mm	6.183.1130
PEEK capillary 40 cm 0.5 mm	6.183.1050
Various parts from Swagelok	-

Instrument modification

Instead of the precision control valve a 1/16 inch PEEK capillary with a 0.18 mm inner diameter is used to limit the CO₂ flow rate.

Analysis

System preparation

To prepare the system, it is first flushed with sample followed by drying with nitrogen. As the water content of the sample might be very low, it is important to have a low start drift.

Method

To measure the sample, a modified Gas Analyzer method is used. The method is available on request from the Metrohm head quarter.

Sample determination

Sample sizes between 1500 and 2500 mg are used for the determinations.

Results

Mean / [ppm] (n = 6)	RSD / [%]
99.0	0.38

Comments

The modification of the system must be carried out by a Metrohm service technician or a specially trained person.