

# CEMS System

## FTIR GAS ANALYZERS

COMPLETE CONTINUOUS EMISSIONS MONITORING SYSTEM

**In-Situ**  
Continuous Gas Analysis

For  
Gas  
Monitoring

**CEMS system**

MCERTS  
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UKAS  
CERTS  
011  
CERTIFICATE NO. SIRA MC 030014/00

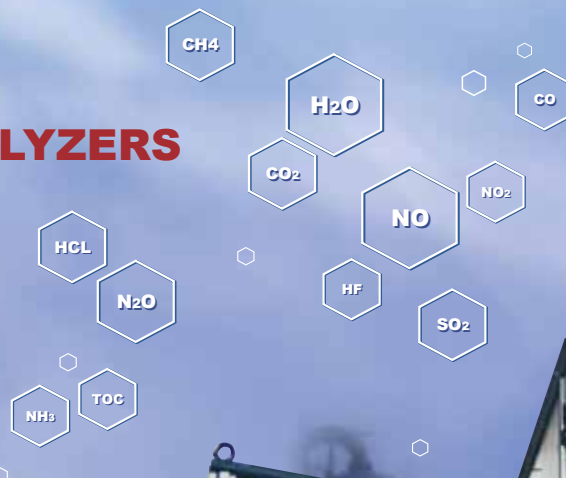
TÜV

**FTIR: Fourier Transform Infrared Spectroscopy**  
Continuously monitor the components of more than  
12 different gases in the specific algorithm !!

# CEMS System FTIR GAS ANALYZERS



**In-Situ**  
Continuous Gas Analysis



## GAS ANALYZER, APPLYING THE FTIR PRINCIPLE, CAN MEASURE MANY DIFFERENT GAS COMPOUNDS.

Up to 50 different mixed gases from low(ppm) to high(%) concentration can be measured simultaneously. This is analyzers made by Gaset Technologies Oy, which have a high reputation and confidence in the market in each European country promoting environmental preservation..



### ■ FEATURES

- It can measure water-soluble gas (HCL and others) as well as high temperature/ pressure gas, analyzing sample gas being kept at the high temperature. (180°C)
- Being of pyrometry, it is corrosion-resistant and yet a simple measurement requiring no fluid-removal.
- It adopting quantitative analysis, there is usually no need of calibrated gas, but zero gas calibration only with N2 gas.

### ■ MEASUREMENT PRINCIPLE

A molecule of a material vibrates at the specific frequency. Accordingly, as it absorbs infrared spectrum corresponding to the frequency, it can identify the substance from what sort of frequency appears in an absorption peak.

The infrared spectrum emitted by an interferometer as an interfering light may be absorbed by a sample gas in a cell, and the frequency strength characteristic of the molecule can be obtained. By acquiring spectrum from the process of Fourier transformation, the analyzer specifies the gas and determines its concentration with reference to library and CLS algorithm through cross interference compensation and absorption band selection,

### ■ SPECIFICATION

#### ● OUTLINE

Measurement principle : FTIR  
 Measurable : 50 gases  
 Operating temperature : 20 ±20°C  
 Response time : <120sec  
 Gas cell temperature : 50~180°C

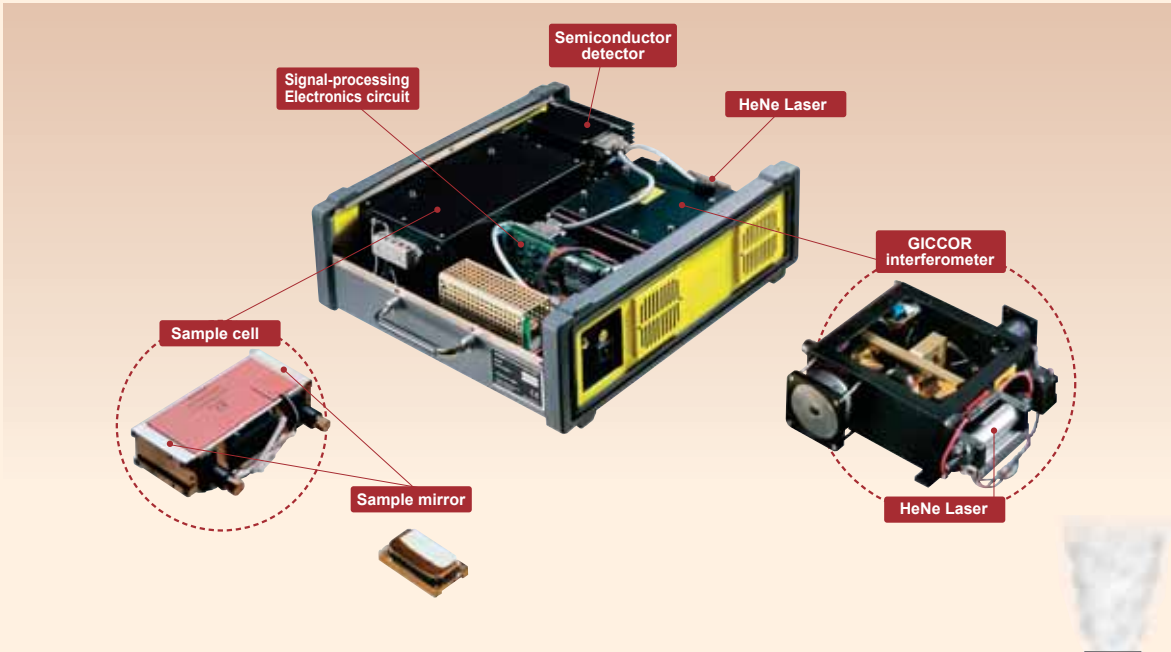
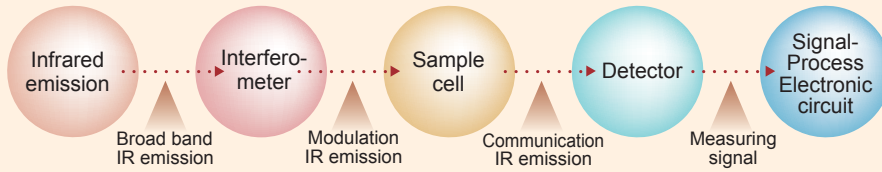
#### ● MEASURING PARAMETERS

Zero point calibration : 24 hours (N2 gas)  
 Zero point drift : < 2% (24hour calibration with N2 gas)  
 Sensitivity drift : None  
 Linearity deviation : < 2% of measuring range  
 Temperature drift : < 2% of measuring range  
 Pressure influence : 1% change of measuring value for 1% sample pressure change

#### ● OUTPUTS

Analog output : DC4~20mA, isolated 8ch (option 16ch)  
 Digital output : ModBus ASCII/COM/LINK  
 Other protocols on request

## GAS ANALYZER-CX-4000 Transform Infrared Spectroscopy



## CEMS BASIC CONFIGURATION

### 1 ENCLOSURE

**Material :** Bake painted steel (cream)  
**Dimensions :** 2530×800×800mm  
**Weight :** 550kg (full system)  
**Protection :** IP54

### 2 AIR CONDITIONING

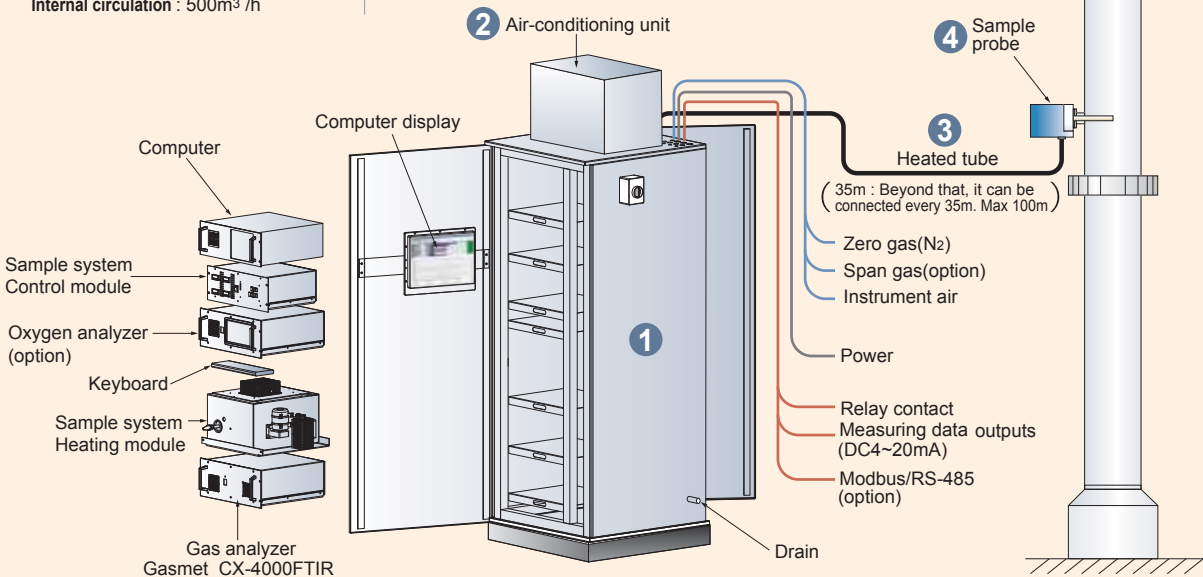
**Cooling capacity :** A35°C/A35°C1500W  
 A50°C/A35°C1000W  
**Internal circulation :** 500m<sup>3</sup> /h

### 3 HEATED TUBE

**Material :** Teflon  
**Operating pressure :** Max 400kPa  
**Temperature :** Max 200°C  
**Power supply :** 230VAC (Option 115VAC) 120W/meter

### 4 SAMPLE PROBE SP2000H

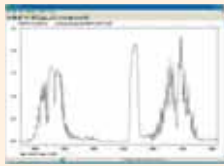
**Power consumption :** 800W  
**Operating temp. :** 180°C  
**Filter element :** Ceramic 2µm  
**Dust loadings :** <2g / m<sup>3</sup>  
**Probe tube :** Material -SUS316  
**Probe length :** 1m  
**Sample temp. :** Max 600°C  
**Sample pressure :** 0.4~6bar



## Calcmnet Quantitative Algorithm Software

### CEMS SYSTEM, Standard Flue Gas Application

It can analyze the absorption spectrum by way of the Calcmnet software. Fully utilizing cross interference compensation of mixed gas /absorption band selection /gas library /CLS algorithm, the software enables detection, identification and quantification up to 50 different gas compounds and can report on either a wet or dry basis.



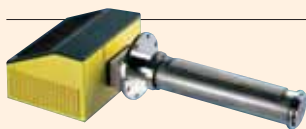
### CEMS System is normally equipped with Calcmnet Quantitative Application Software.

COMONENTS	Min Measuring range	Std Measuring range	ppm → mg/Nm <sup>3</sup>
H <sub>2</sub> O	0~5 vol-%	0~25 vol-%	
CO <sub>2</sub>	0~10 vol-%	0~20 vol-%	
CO	0~60 ppm	0~500 ppm	1ppm = 1.25 mg/Nm <sup>3</sup>
N <sub>2</sub> O	0~50 ppm	0~100 ppm	1ppm = 1.96 mg/Nm <sup>3</sup>
NO	0~150 ppm	0~300 ppm	1ppm = 1.34 mg/Nm <sup>3</sup>
NO <sub>2</sub>	0~100 ppm	0~300 ppm	1ppm = 2.05 mg/Nm <sup>3</sup>
SO <sub>2</sub>	0~25 ppm	0~100 ppm	1ppm = 2.86 mg/Nm <sup>3</sup>
NH <sub>3</sub>	0~20 ppm	0~100 ppm	1ppm = 0.76 mg/Nm <sup>3</sup>
HCL	0~10 ppm	0~100 ppm	1ppm = 1.63 mg/Nm <sup>3</sup>
HF	0~20 ppm	0~100 ppm	1ppm = 0.89 mg/Nm <sup>3</sup>
CH <sub>4</sub>	0~50 ppm	0~100 ppm	1ppm = 0.72 mg/Nm <sup>3</sup>
TOC	0~15 mgC	0~40 mgC	

## In-Situ Continuous Gas Analysis

### In-Situ is an integrated version of sample system and gas analyzer

On top of easy maintenance as well as the excellent analytical features and calibration function, it is compact designed. This performance can be comparable to that of CEMS system.



**Dimensions** : 1018 × 390 × 250mm  
**Weight** : 30kg  
**Operating temp** : -30 ~ 40°C  
**Power supply** : 100 ~ 115V or 230VAC Max500W  
**Probe material** : 316SS

**Probe dimensions** : Φ134 L589  
**Sample gas temp.** : 250°C max  
**Air supply** : 120L/min for probe cleaning/cooling  
 100L/min for zero calibration  
 (15minutes at 24 hour intervals)

### Line of business

- Rotary Paddle Type Level Switch
- Vibration Type Level Switch
- Swing Type Level Switch
- Acoustic Level Switch
- Capacitance Type Level Switch
- Capacitive Proximity Sensor
- Capacitance Type Level Indicator
- Diaphragm Type Level Switch
- Tilt Switch
- Leak Type Level Switch
- Microwave Switch
- Sounding Bob Type Level Indicator
- Flow Switch
- Conductance Type Level Switch
- Float Switch
- Float Type Level Indicator
- Ultrasonic Type Level Indicator
- Equipments For Conveyor Lines
- Dust Monitor System
- Zirconia Oxygen Analyzer
- Laser Type Level Indicator
- RADAR Type Level Indicator
- On-line Sensors for Accurate Liquid Analysis
- Ultrasonic Flow meter

\*Please be sure to read USER'S GUIDE, Installation & Operation Instructions before using the instrument.

\*The specifications herein may be subject to change without advance notice.

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Design, development, and manufacture of level measuring sensors

Agent