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# GCS GIGAS FT-IR CEM SYSTEM



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## EMISSION & PROCESS

The GCS is an extractive Continuous Emission Monitoring system suitable for analysis of exhaust gases emitted to the atmosphere by industrial plants.

The heart of the system is the GIGAS FT-IR 10M multi-component analyser, a measuring instrument which is able to simultaneously calculate concentrations of up to 50 gas components, among which H<sub>2</sub>O, CO<sub>2</sub>, CO, NO, NO<sub>2</sub>, N<sub>2</sub>O, SO<sub>2</sub>, HCl, HF, NH<sub>3</sub> and CH<sub>4</sub>.

# GCS, GIGAS FT-IR CEM SYSTEM

## GAS EMISSION MONITORING AND PROCESS CONTROL SYSTEM

The system can also be equipped with additional internal (for O<sub>2</sub> and TOC) and in-situ (for stack measures) analysers. Choice and integration of optional components is easy and flexible, thanks to the modular design of the system; their inclusion means a complete integration inside the system, both physical and functional.

### APPLICATIONS

- > Municipal waste incinerators
- > Hazardous waste incinerators
- > Chemical plants
- > Biomedical plants and processes
- > DeNOx and DeSOx monitoring
- > Scrubber efficiency in process control
- > Aluminum and steel smelters
- > Cement kilns
- > Gasification and pyrolysis processes
- > Crematoria
- > Combustion research plants
- > Glass and ceramics melting furnaces

### MAIN CHARACTERISTICS

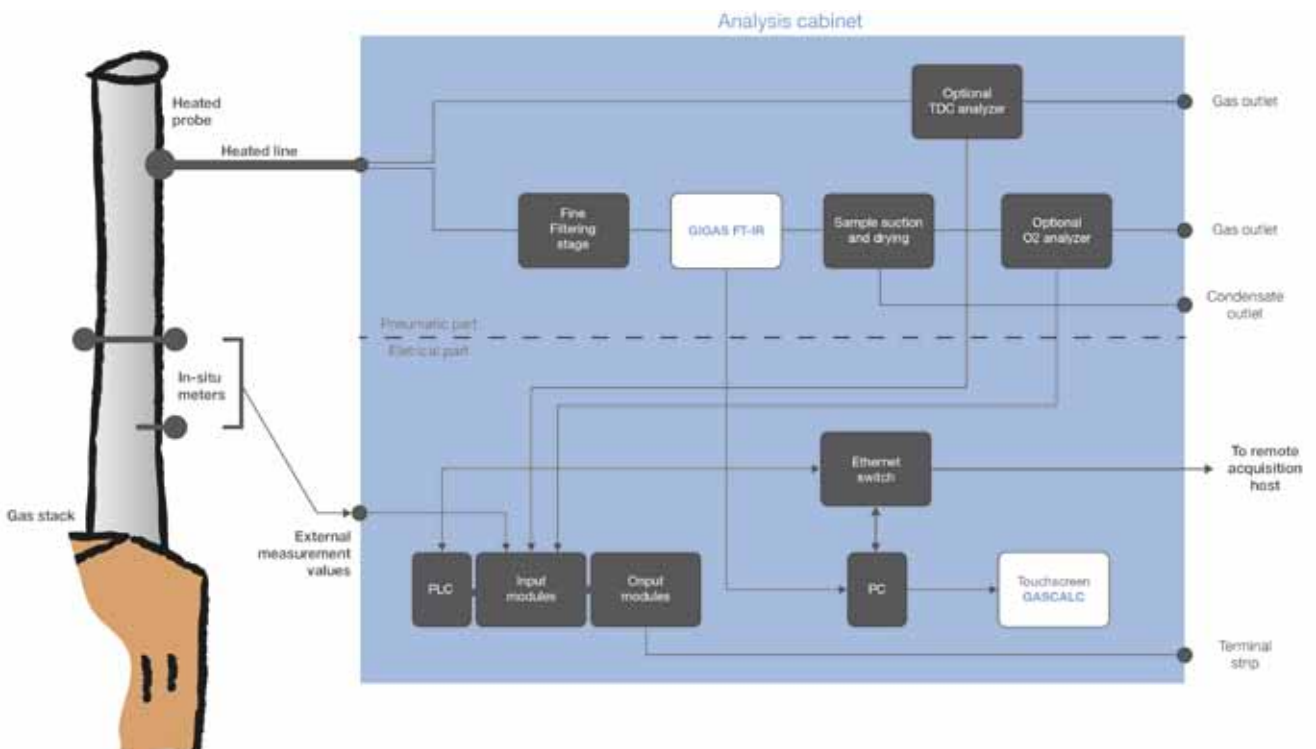
- > Special probe design for HF sampling
- > Hot/wet sampling with dust filtration
- > Additional gas components and ranges (according to customer needs)
- > Integration of additional analysers and in-situ meters
- > Automatic safety procedures in case of malfunctions

### TÜV certified

- > 6 months maintenance interval for all gas components (more than one year of field test)
- > Response time lower than 200 s for all gas components 240 s for HCl, HF and NH<sub>3</sub>
- > Automatic daily background acquisition
- > Span drift lower than 2% of full-scale value for all gas components
- > Availability higher than 98%

### BENEFITS

- > Analysis of corrosive mixtures
- > Application to the harshest process conditions
- > Suitable for any application and to-be-monitored gas matrix
- > A unique measuring system for any additional measure
- > No damage of system parts, measured values identified as invalid
- > Continuous, long-term functioning without maintenance
- > Fast response of the system to sample composition changes
- > Zero drift automatically corrected
- > Very accurate measuring during the whole maintenance interval
- > The biggest possible time percentage



with valid measures

**SOFTWARE**

GasCalc is the software used in the GCS to perform every task about measurement, monitoring and control; it shows on the screen information about gas components to be measured, current concentration and full-scale values, measurement process and system components status.

GasCalc is installed on the internal PC and its main window shown in the panel monitor: the user can see there useful information and interact with the program by simply clicking on the touchscreen with the finger.



1. GasCalc software

- > TÜV certified according to EN 15267 (Part 1, 2, 3) and EN 14181
- > HF analysis with range 0-5 mg/m3
- > 6 months maintenance interval for all gas components
- > Suitable for plants subject to European Directives 2000/76 and 2001/80

**Measurement**

- > Graphical plot
- > Values stored on the PC

**Interaction**

- > Modular synoptic view
- > Functioning status

**Configuration**

- > Quantification methods
- > Measurement parameters
- > Acquisition of variables required by the quantification
- > Zero procedure
- > Communication parameters with the PLC



2. GIGAS FT-IR CEM system

**MEASURED COMPONENTS**

COMPONENTS	FULL-SCALE VALUE				MDC	
	standard		extended		mg/Nm <sup>3</sup>	ppm
	mg/Nm <sup>3</sup>	ppm	mg/Nm <sup>3</sup>	ppm		
H <sub>2</sub> O	***	300000	***	***	***	100,00
CO <sub>2</sub>	***	200000	***	***	***	900,00
CO	75	60	300	240	0,36	0,29
NO	200	150	400	300	1,41	1,05
NO <sub>2</sub>	100	50	200	98	1,22	0,60
N <sub>2</sub> O	50	26	1000	511	0,16	0,08
SO <sub>2</sub>	75	27	300	105	0,63	0,22
HCl	15	10	90	56	0,48	0,29
HF	5	6	15	17	0,07	0,08
NH <sub>3</sub>	15	20	***	***	0,30	0,39

## TECHNICAL SPECIFICATIONS

### GENERAL INFORMATION

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Dimensions (clearances) [mm]	1200 (500) x 1900 (200) x 800 (1000) (W x H x D)
Weight	approx. 300 kg
Color / Protection class	RAL 7035 / IP54
Conformity	EN 15267 (-1, -2 and -3), EN 14181 tested by TÜV Rheinland and approved by UBA (German relevant body) suitable for plants subject to European Directives 2000/76 and 2001/80

### POWER SUPPLY

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Type	1P + N + PE, 230 V, 50 Hz / - (standard) 3P + N + PE, 400 V, 50 Hz / - (optional)
Power consumption	approx. 3 kW (base system) 100 W/m for sampling line max. 600 W for the probe

### PNEUMATIC SPECIFICATIONS

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Sampling pressure		0.4 ÷ 6 bar
Gas sample inlet (cabinet)	pressure	1 ± 0.1 bar
	temperature	180 ± 2 °C
	dust filtration	>99% for particles of diam. more than 2 µm
	flow rate	max. 5 L/min (by internal pump)
Instrument air inlet (cabinet)	pressure	6 ÷ 8 bar
	flow	150 L/min
Calibration gas inlet (cabinet)	pressure	1 ÷ 3 bar
	flow	5 L/min
Environmental conditions	outer temperature	+5 ÷ +25 °C (45°C) with air fan (air conditioner)
	relative humidity	max. 80% (non condensing)
	position	safe from rain and direct sun radiation

### INTERFACES AND SIGNALS

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PC	visual, with 17" touchscreen monitor
PLC modules	type and number according to customer specification:
	Digital I/O (SPDT)
	Analog I/O (4 – 20 mA)
Data communication	Ethernet, with Modbus protocol (standard)
	RS232, with Modbus protocol (optional)
	others on request