Process &
Environmental
Analysis Solutions

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MGS300-KIT

FTIR-BASED CONTINUOUS EMISSIONS MONITORING SYSTEM (CEMS) INTEGRATOR KIT

The MGS300-KIT from MKS Instruments provides integrators with access to key components used in the Continuous Emissions Monitoring system (CEMS), the MGS300, which has achieved TÜV and MCERTS certification in accordance with requirements of the DIN EN 15267-3 standard. The MGS300 system is a fully turn-key system designed to provide reliable monitoring of emissions from stationary sources, including municipal and industrial waste incinerators, power plants, cement kilns and other fixed location sources of emissions.

The key modules that make up the MGS300 system are now available in the form of a kit (MGS300-KIT) allowing integrators to incorporate the same core elements of the MGS300 system performance and reliability into their own continuous emissions monitoring systems. The MGS300-KIT is comprised of the MultiGas 2030 CEM-Cert FTIR spectrometer, along with the main components used in the MGS300 system extractive sampling system, including the MGS300-SP sample probe, MGS300-EP eductor pump module and the MGS300-HL heated line assembly.

These performance-critical extractive sampling system components are integral to the MGS300 system's achievement of TÜV and MCERTS certification. These components are designed to operate at an elevated temperature so that all sample species remain in the gas phase with no sample condensation. The materials used in their construction (wetted parts) have been carefully selected to ensure that sample integrity is maintained at all times and that no selective absorption or desorption of gas components occurs under normal monitoring conditions.

Features & Benefits

- MGS300-KIT contains the components which are integral to the MGS300 system's achievement of TÜV and MCERTS certification
- Modular kit design allows easy integration of critical MGS300 system components into integrator CEMS
- High performance FTIR technology addresses a wide range of gas components, with direct analysis of hot, wet sample streams
- Extractive sampling system components operate at an elevated temperature to eliminate sample condensation
- Selection of "wetted part" materials used in kit modules ensures sample integrity is maintained
- Highly reliable kit components enable long-term continuous emissions monitoring with minimal maintenance requirements

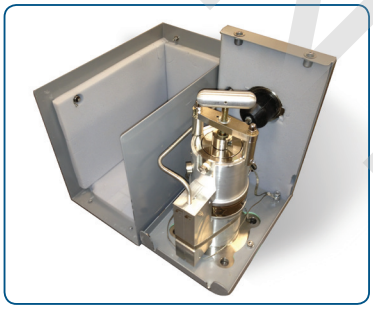
MultiGas™ 2030 CEM-Cert FTIR Spectrometer

At the heart of each MGS300 system lies a MultiGas 2030 CEM-Cert FTIR spectrometer. The MultiGas 2030 CEM-Cert uses high resolution FTIR technology to enable the monitoring of a broad range of gas components over the most challenging of certification ranges available from a single FTIR analyzer. It is able to achieve this with minimal cross-interference effects from either water (up to 40%) or other potentially interfering species. Furthermore, by using permanently stored internal reference calibration spectra, the need for costly calibration gas mixtures is all but eliminated.

Features & Benefits

- Critical component of the TÜV & MCERTS certified MGS300 system with the proven capability to meet DIN EN 15267-3 standard requirements
- High resolution FTIR technology (0.5 cm^{-1}) for accurate gas composition measurements with low cross-interference effects
- Measures multiple gas components over a wide range of compositions eliminating the need for multiple instruments
- Permanent reference calibration spectra all but eliminates the need for calibration gases
- Software with communication protocol options for integration with a CEMS control platform

MGS300-SP Sample Probe



The MGS300-SP is a heated gas sample probe designed for continuous use in extractive sampling systems. The MGS300-SP may be used even when the sample contains dust, aerosols, water vapor and high dew point corrosive gases and must be kept above its dew point to prevent corrosion and sample degradation prior to analysis or sample conditioning.

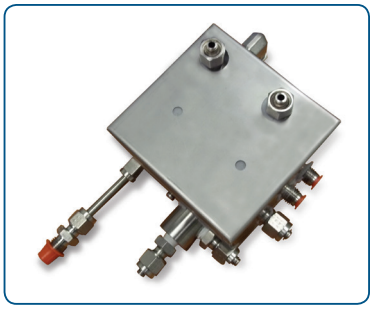
The MGS300-SP incorporates a corrosion resistant, heated PTFE filter element which is easily replaceable.

The filter element is mounted in a thermally isolated and electrically heated stainless steel housing, protected by a weather proof enclosure. When installed on the MGS300 system, the temperature is regulated by a maintenance free, electronic temperature controller with under temperature alarming. A heated sample line may be directly connected to the probe using a demountable PG 42 cable conduit on the probe's housing.

Features & Benefits

- Used as part of the TÜV & MCERTS certified MGS300 system
- Easily replaceable PTFE filters
- Heated gas path 180°C to 200°C (356°F to 392°F)
- Stainless steel construction
- Calibration gas port
- Separate temperature controller available

MGS300-EP Eductor Pump Module



The MGS300-EP is a heated eductor pump module designed for the transport of hot, wet and corrosive combustion exhaust gases to the MultiGas 2030 CEM-Cert FTIR analyzer. The unique MGS300-EP module has no moving parts and ensures consistent sample gas flow to the analyzer while offering the low maintenance required for long-term Continuous Emissions Monitoring applications.

Features & Benefits

- Used as part of the TÜV & MCERTS certified MGS300 system
- Air flow driven eductor pump
- No moving parts, low maintenance
- Calibration gas port
- Heated gas path 180°C to 220°C (356°F to 428°F)
- Stainless steel construction
- Integrated sintered metal dust filter
- Sample flow alarm capability
- Heated T-connector for other hot analyzers, e.g. FID

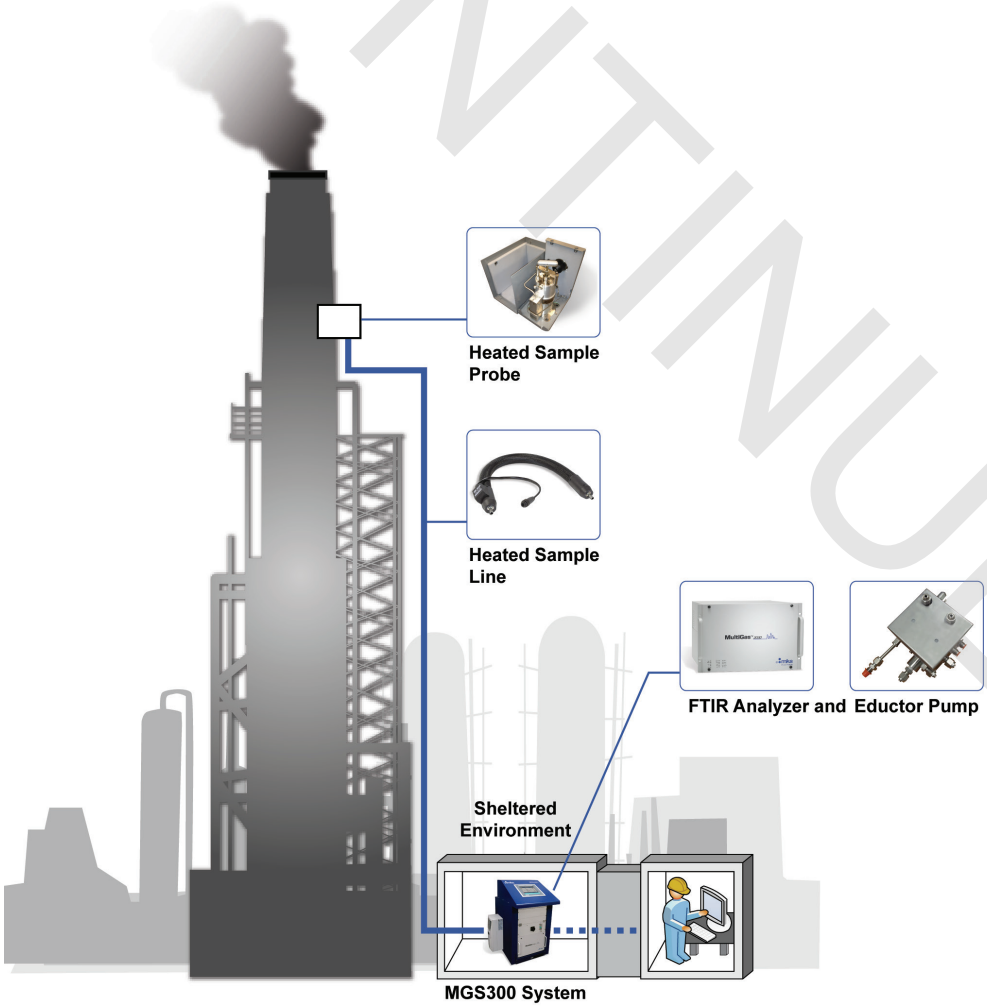
CEMS Kit

MGS300-HL Heated Line Assembly

The MGS300-HL heated line assemblies ensure that sample species remain in a gaseous state during transport from the MGS300-SP sample probe to the MultiGas gas cell. These lines are extremely robust, with high quality materials and components used throughout in their construction. The MGS300-HL design ensures that an even temperature is maintained along the entire length of the line, with silicone thermal insulation used to minimize heat losses.

Features & Benefits

- Used as part of the TÜV & MCERTS certified MGS300 system
- Rugged construction for long lifetime
- Excellent thermal insulation – low heat loss
- Stainless steel inner core for optimum CEMS gas analysis performance
- Integral temperature sensor for effective temperature control



CEMS Kit Component Diagram —
Illustrating layout and location of integrator kit modules

Specifications and Ordering Information

MultiGas 2030 CEM-Cert

Measurement Technique	High resolution (0.5 cm^{-1}) FTIR spectrometry
Infrared Source	Silicon carbide @ 1200°C
Reference	Helium Neon Laser (15798.2 cm^{-1})
Detector	Thermoelectrically (TE) cooled MCT (Hg Cd Te)
Certified Temperature Range	+5°C to +40°C
Spectrometer & Optics Purge	Each 0.2 L/min of dry N_2 or CO_2 free clean, dry air with dewpoint below -70°C
Gas Cell	5.11m pathlength with BaF_2 windows, Viton® seals & MgF_2 coated mirrors. ¼" Swagelok® fittings
Enclosure	19-inch rack mount chasis, 444.5 W x 317.5 H x 647.7 D mm (17.5"W x 12.5"H x 25.5"D)
Weight	50 Kg (110 lbs)
Laser Safety	Class 1 laser product contains a Class 3R laser with continuous wave output at 633 nm

MGS300-SP Sample Probe

Wetted Parts	Stainless steel, PTFE (filters), Viton
Mounting Flange	DN 65, PN6, DIN 2573, fabricated from stainless steel
Flow Rate	Up to 600 NL/h, depending on application
Weight & Dimensions	11 Kg, 160 W x 350 H x 290 D mm (6.30"W x 13.78"H x 11.41"D)
Power Consumption	505W

MGS300-EP Eductor Pump

Instrument Air Gas Supply	5-8 bar (regulated to approx. 3.5 bar) with a flow of 25 L/min
Sample Flow	1.6 L/min
Operating Temperature Range	180°C to 220°C (356°F to 428°F)
Weight & Dimensions	2.5 Kg, 103 W x 104 H x 62 D mm (4.05"W x 4.09"H x 2.44"D) without gas connections
Power Consumption	160W

MGS300-HL Heated Line

Standard Line Configuration	10m in length with stainless steel core & 6mm compression fittings (female thread)
Maximum Temperature & Pressure	250°C, 60 bar
Power Consumption	1,000W

General

Power	230 VAC/50Hz or 115 VAC/60Hz
Compliance	CE

Gas Component	Certification Range	Supplementary Range 1	Supplementary Range 2	Detection Limit
NH_3	0-10 mg/m^3	0-75 mg/m^3	—	0.35ppm
CO	0-75 mg/m^3	0-300 mg/m^3	0-1500 mg/m^3	0.50ppm
SO_2	0-75 mg/m^3	0-300 mg/m^3	0-2000 mg/m^3	0.60ppm
NO	0-200 mg/m^3	0-400 mg/m^3	0-1500 mg/m^3	0.50ppm
NO_2	0-50 mg/m^3	0-100 mg/m^3	0-1000 mg/m^3	0.40ppm
HCl	0-15 mg/m^3	0-90 mg/m^3	0-200 mg/m^3	0.20ppm
HF	0-3 mg/m^3	0-10 mg/m^3	—	0.25ppm
CH_4	0-15 mg/m^3	0-50 mg/m^3	0-500 mg/m^3	0.30ppm
CO_2	0-25%	—	—	0.025%
H_2O	0-40%	—	—	0.25%
N_2O	0-50 mg/m^3	0-100 mg/m^3	0-500 mg/m^3	0.10ppm

Gas Components and Ranges —
Addressed by the TÜV & MCERTS certified MGS300 system

Contact your local account representative for pricing, availability, and applications guidance.

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