CEMS maritime

NDIR - gas analyzer for scrubber

MADE IN GERMANY

SO_2 / CO_2 ratio for Exhaust gas cleaning systems (EGCS)

This system for **Continuous Emission Monitoring (CEMS)** is built for the maritime use.
It has been specially developed for analyzing gas concentrations in $DeSO_x$ applications (Scrubbers). Where ship emissions are limited by regulation (ECAs), our system can be integrated for monitoring SO_2 and CO_2. The compact box includes a precise and efficient NDIR sensor, a gas dryer, a human machine inferface, pumps, analog outputs and Modbus communication.
By operating the NDIR sensor in change flow mode, a stable zero point can be ensured over long time periods.

**low-maintenance technology**

modular design

cost-efficient

- Simultaneous measurement of CO_2 and SO_2
- Easy & flexible installation due to compact size
- Long-term stability by operating in change flow mode
- Robust against rough environmental conditions
- Analyzer performance according to the NO_x technical code 2008 / MEPC 177(58)

TRACE-GAS
we simply measure

Main features

- An integrated housing cooler ensures a stable air conditioning inside the box.

- Change-flow-mode: The internal Control Valve Unit is managing a continuous zero point correction for a stable zeropoint.

- An integrated HMI is managing the analog and digital communication as well as the 7" Touch-Panel for operating purposes.

- The valves, pumps, filter and the gas cooler are arranged in smart modules which can be replaced quick & easy.

- Optimized service and maintenance possibilities provide an uncomplicated support for the system integrator.

- The IP43 enclosure is mounted by damping elements to withstand all kinds of vibrations.

## Easy installation
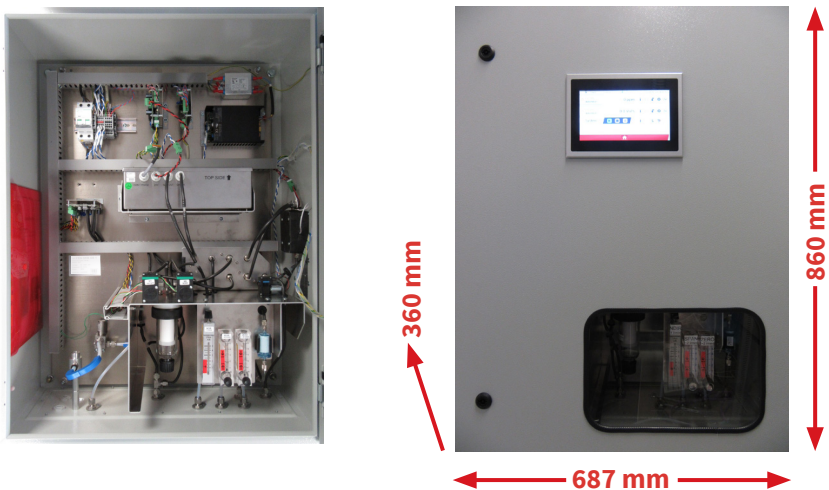
360 mm

860 mm

687 mm

Measurement principle

SO_2 and CO_2 are measured by a nondispersive infrared (NDIR) analyzer.
Since we are not using any moving parts in our NDIR module, we can ensure a long term operation with fewest maintenance needs.

As sample gas enters the analyzer, it gets precisely cooled down to 4°C, which minimizes humidity influences. Additional pressure regulation as well as temperature regulation allow measurements with highest accuracy.

A Control Valve Unit enables a change-flow-mode technique to ensure a long-term stability.

Flow diagram
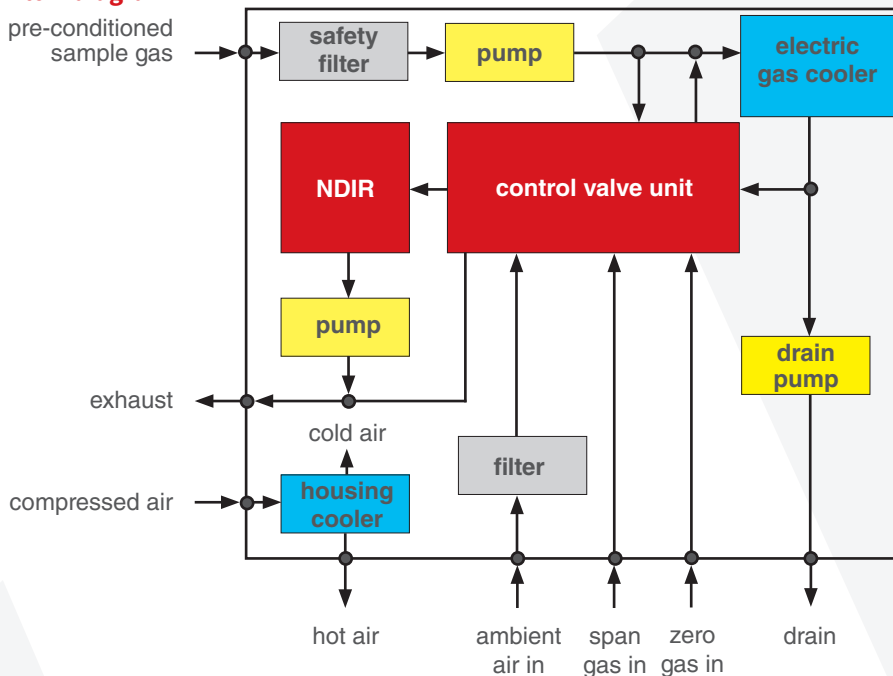
We are developing and producing custom electronic and mechatronic solutions for 40 years. Our cost-efficient solutions in the field of trace-gas analysis (from CLD, TDLAS, PAS, NDIR to FIDs) convince with precision and quality.

Join a first-class partnership with us and profit from our innovative team.
We simply measure.

Measuring range [1]	
SO$_2$	0 - 250 ppm
CO$_2$	0 - 20%
[1] other measuring ranges upon request	

Specifications			
Accuracy	≤ ± 2% of reading or 0,3% of full scale		
Noise	≤ ± 2% of full scale		
Zero drift	≤ 2% of full scale in 1 h		
Span drift	≤ 2% of full scale in 1 h		
Precision	≤ ± 1% of full scale		
Response Time	< 30 s		
Ambient conditions	Temperature -5 to 45℃, Humidity: < 90%,		
Sample gas	Filtered, heated sample gas line (no condensation)		
Gas flow	3 l/min[1], warning message for incorrect flow values		
Power supply	90 - 264 VAC, 50 - 60 Hz, internal safety management, max. power consumption 380 W		
Dimensions	860 x 687 x 360 mm		
Assembly	Wall installation under shelter or installation in control room		
Analog output	Current output 4 - 20 mA for each measured gas		
Digital output	Analyzer calibration status		
Communication	Modbus TCP/IP		
Weight	40 kg		
Connections	zero gas, combined span gas, sample gas, exhaust, drain, compressed air		
Zero point correction	Automatically done by change-flow-mode		
Interface	Integrated HMI with 7" LCD (capacitive touch)		
[1] can be adjusted if necessary			