

GM950

Rapid Measuring System for Detecting Unburned Components in Flue Gas



New Measuring Concept

- Combines in-situ and extractive measuring technology
- Self-learning measuring system
- Quasi-continuous calibration

New Measurement Value

- CO equivalent ($CO_e = CO + H_2 + C_xH_y$) represents the total unburned components in the flue gas

New Features

- Evaluation of the flue gas flammability
- Installation just in front of electrostatic precipitator
- Increased safety of electrostatic precipitator
- Reduction of electrostatic precipitator shutdowns

System Components

- 2 probe tubes + extractive probe or combination probe
- Analysis cabinet
- Evaluation unit
- MEPA software

Benefits *)

- Protection of electrostatic precipitator
- Combustion optimization

*) The GM950 must not be the only device in the safety chain as solution for safety-critical applications. The operator is responsible for the device settings.

Area of Application

- Cement industry
- Paper industry
- Aluminium industry
- Combustion plants

Key Features

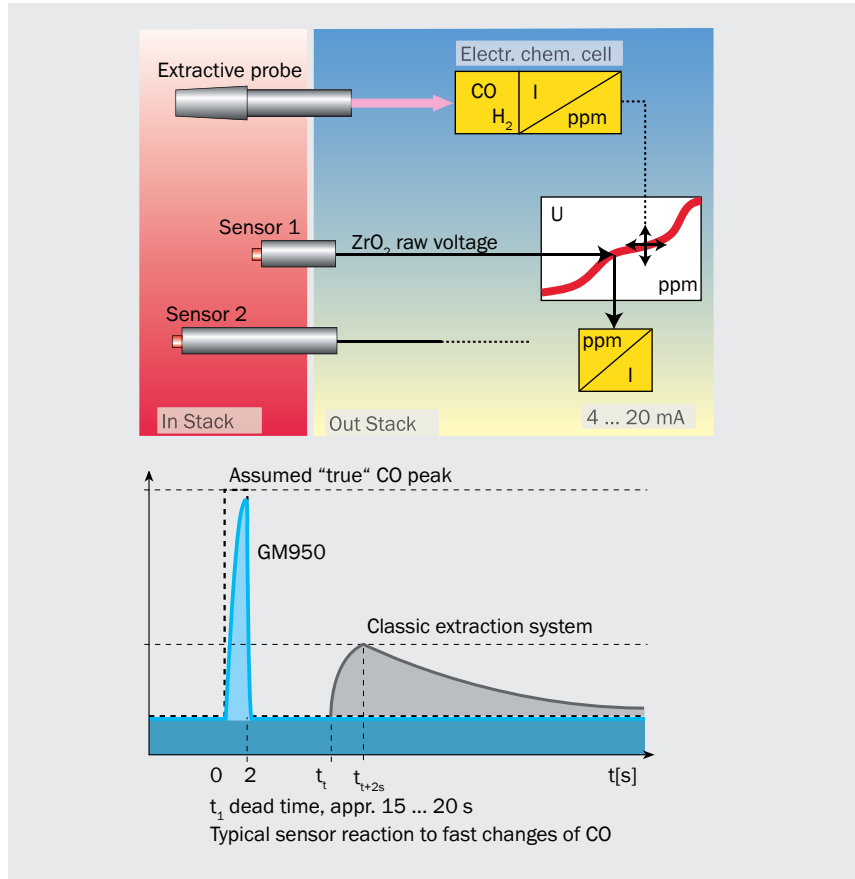
- The CO_e measurement value is directly related to the gas flammability
- Realistic monitoring of rapid changes in CO_e concentration
- Since the measuring site is directly in front of the electrostatic precipitator, the precipitator can be protected effectively
- High availability through redundancy: if one sensor fails, the device is still fully functional
- Modular concept enables maintenance/repair of individual components in measuring mode
- t_{90} -time: 2 seconds
- Max. load: 200 g/m³ N
- Meas. range: 0 ... 5 % Vol.

Measuring Principle

The GM950 is a measuring system, capable of self-learning. The two rapid ZrO₂ sensors located in the gas duct are calibrated quasi-continuously by an electrochemical CO+H₂ cell. In this way, the GM950 provides rapid and sufficiently accurate measurements, even in gas ducts with a high dust load.

Signalling

In dynamic gas processes, the signal shape of the GM950 is very different to that of extractive measuring systems. While an extractive system identifies the signal only after a long delay and a lower amplitude, the GM950 is excellent at tracking a short pulse.



Technical Data GM950	
Measuring data	
Measurement value	CO equivalent ($CO_e = CO + H_2 + C_x H_y$)
Min. measuring range	0 ... 1 % Vol.
Max. measuring range	0 ... 5 % Vol.
Typical t_{90} time	< 2 seconds
Static accuracy*)	8 % of measurement value or ± 0.05 % Vol. (the larger value is taken)
Plant data	
Max. dust load	200 g/m ³ N
Max. gas temperature	< 500 °C (optional max. 600 °C)
O ₂ concentration	1 ... 21 % Vol.
Internal duct pressure	-50 ... +50 mbar
Ambient temperature	-20 ... +45 °C; ... +60 °C with cooling unit (optional)
Device data	
Compressed air requirement	2 ... 6 bar (dust/oil/condensate free)
Voltage supply	90 ... 260 V AC, 50/60 Hz
Power consumption	400 W
Protection type	IP 54
Interfaces and Signals	
Interface	RS232
Analog output	0/2/4 mA to 20 mA
Status output	4 relays (48 V; 1 A DC/0.5 A AC)

*) After calibration with test gas and after the GM950 has accomplished in minimum one calibration cycle with a relevant gas