

# 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

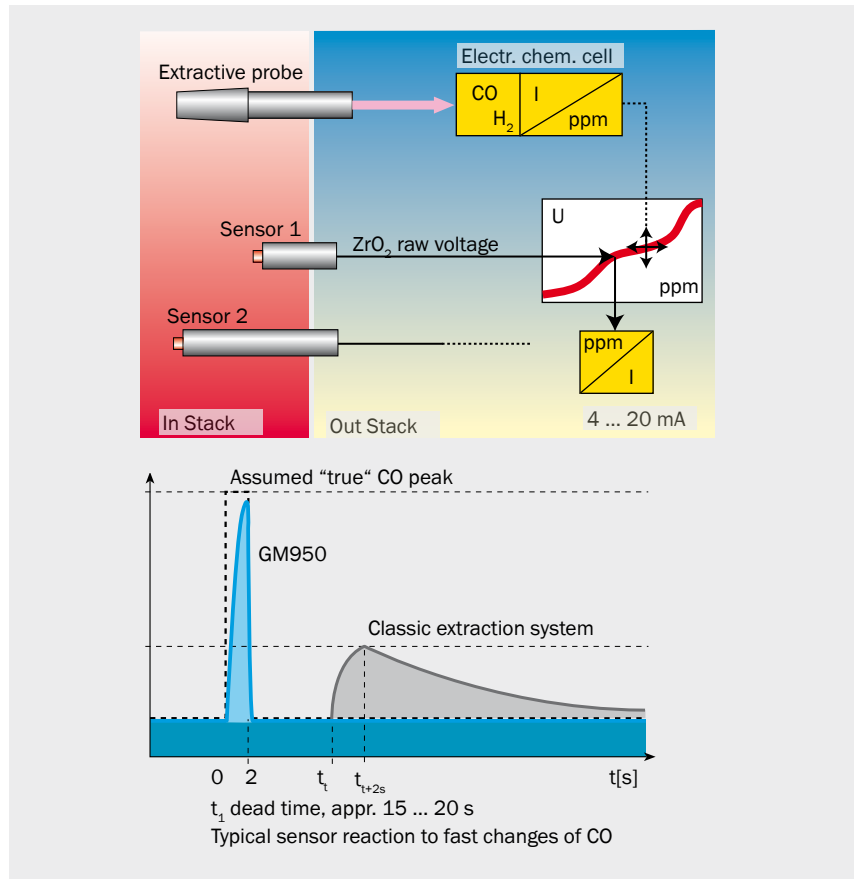
- The  $CO_e$  measurement value is directly related to the gas flammability
- Realistic monitoring of rapid changes in  $CO_e$  concentration
- Since the measuring site is directly in front of the electrostatic precipitator, the precipitator can be protected effectively
- High availability through redundancy: 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/m<sup>3</sup> N
- Meas. range: 0 ... 5 % Vol.

## Measuring Principle

The GM950 is a measuring system, capable of self-learning. The two rapid ZrO<sub>2</sub> sensors located in the gas duct are calibrated quasi-continuously by an electrochemical CO+H<sub>2</sub> 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	
<b>Measuring data</b>	
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 <sub>90</sub> time	< 2 seconds
Static accuracy*)	8 % of measurement value or ± 0.05 % Vol. (the larger value is taken)
<b>Plant data</b>	
Max. dust load	200 g/m <sup>3</sup> N
Max. gas temperature	< 500 °C (optional max. 600 °C)
O <sub>2</sub> concentration	1 ... 21 % Vol.
Internal duct pressure	-50 ... +50 mbar
Ambient temperature	-20 ... +45 °C; ... +60 °C with cooling unit (optional)
<b>Device data</b>	
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
<b>Interfaces and Signals</b>	
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