SCPS

Gas analysis under very harsh conditions, directly on rotary kilns

Modular system solution from a single source

- Prevention of system down-times due to timely detection of problems in the process
- Uniformly high product quality
- Lower energy costs due to an optimized combustion process
- Rugged, proven technology for minimal maintenance
- High system availability due to harmonized components from a single source
- Quick and capable assistance thanks to remote access and an experienced service team



Endress+Hauser
People for Process Automation

The modular system solution from a single source

Cement production is a highly resource- and energy-intensive process. Due to increasing competitive pressure, improving energy efficiency and maximizing production performance have become essential. Consequently, manufacturers are increasingly shifting towards alternative raw materials and fuels. However, the use of heterogeneous and often low-quality fuels typically leads to higher concentrations of undesirable sulphur- and chlorine-based compounds in the process.

The SCPS state-of-the-art process gas analyzer system provides reliable information on process quality, which helps in detecting problems early on — such as incomplete combustion, cyclone and kiln blockages as well as chlorine concentrations harmful to the process — and helps to prevent these problems.



Hot/wet extractive or cold/dry extractive measurement technology?

The cold/dry extractive process gas analysis has been the industrial standard for decades. It is well suited for measuring the main combustion-related components such as NO, CO, CO_2, and O_2 (as well as CH_4 in gas-firing).

With the increasing use of alternative fuels, there is a growing need to measure additional components such as SO_2, HCl, and NH_3, since these occur in higher concentrations during the combustion of alternative fuels.

However, measuring these components with cold/dry extractive analysis is challenging because they are highly soluble in water.

During the sample gas conditioning process, condensation in the sample gas cooler can cause these components to dissolve and be partially removed from the gas sample (washout effect). The resulting acidic condensates can damage the analyzer system. For this reason, SO_2 is often intentionally removed by adding hydrogen peroxide (H_2O_2).

The hot/wet extractive process gas analysis offers the advantage of maintaining high temperatures throughout the entire sampling system.

As a result, SO_2, HCl, and NH_3 do not form acidic condensates and can therefore be measured reliably without losses.

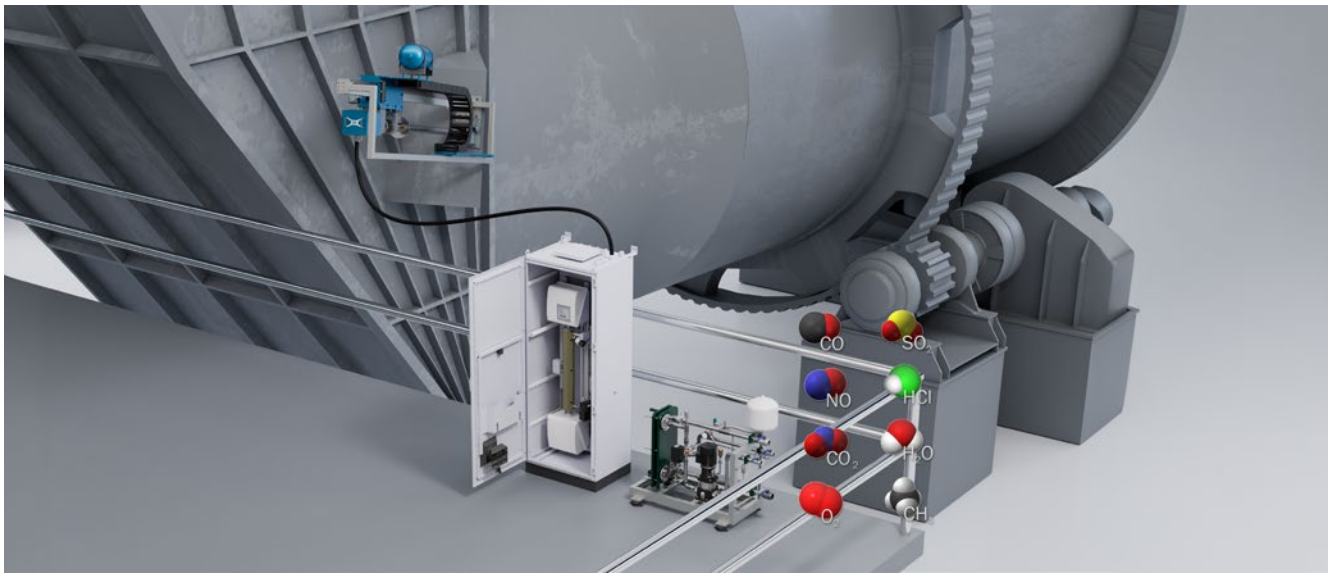
The choice of analytical process mainly depends on the fuel used. Endress+Hauser offers reliable solutions for both of these measurement technologies. Our modular SCPS analyzer system solution covers all variants from a single source and provides customers with optimal solutions for their individual requirements.

Precise process gas analysis
More precise process gas analysis means better optimization for combustion processes and quality assurance. SCPS offers analysis options for any requirements.

Rugged probes, advanced technology
The combination of highly durable materials and application-optimized technology enables precise and reliable measurements, even under demanding operating conditions.

The right process optimization analysis
The versatile SCPS analyzer system allows you to give energy efficiency, product quality and system availability a reliable, permanent boost.
The result: You gain competitive advantages.

Minimal downtimes in harsh environments
The SCPS system integrates effective cooling and automated purging technologies that significantly reduce maintenance requirements and minimize unplanned downtime. This leads to improved system availability and lower overall operating costs.



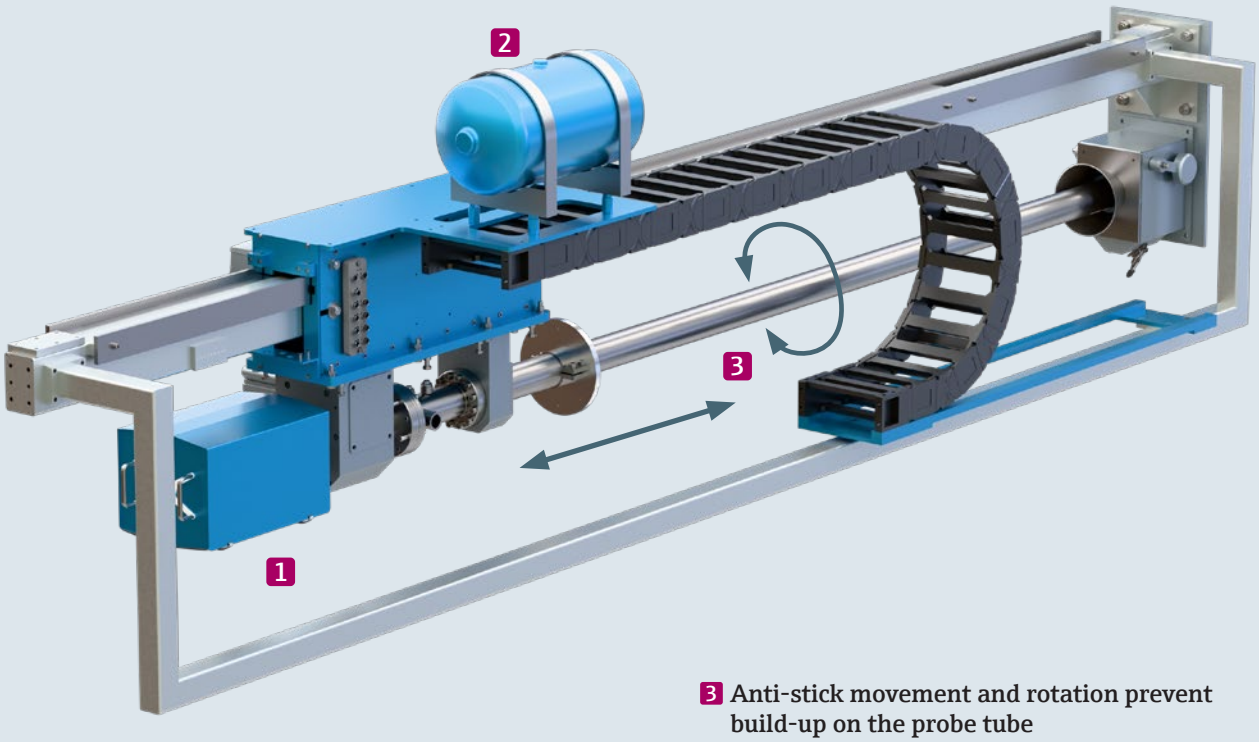
Advantages at a glance

1 Maximum filter service life thanks to 2-stage filter back-purging

Compressed-air filter back-purging thoroughly cleans both the filter element and the filter chamber. This prevents removed dust from resettling on the filter, significantly extending the filter's service life.

2 Reduced maintenance effort at the sampling probe thanks to proven shock blower

The integrated high-pressure shock blower efficiently cleans the probe tube with compressed air at regular intervals. Unlike mechanical cleaning methods, this process eliminates the risk of cleaning tools becoming stuck inside the probe tube.



3 Anti-stick movement and rotation prevent build-up on the probe tube

The probe tube moves forwards and backwards and also rotates during measurement. This prevents material accumulation on the probe tube.

4

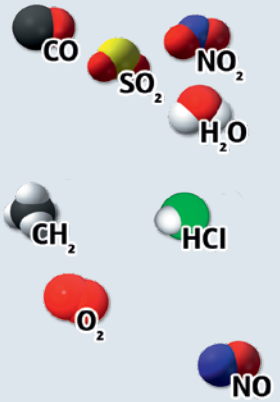


4 Effective probe cooling for high-temperature usage

The efficient cooling system protects the sampling probe at temperatures of up to 1,400 °C. For re-cooling in a water-water cooler, the cooling unit can be connected to the plant's internal water cooling system. Alternatively, re-cooling can be achieved by ventilation with ambient air using an optional air-water cooler.

5





5 Process control using accurate gas analyzer

The system enables precise determination of combustion-relevant gas components, including CO, NOx, CO_2, CH_4, and O_2.
To support consistent product quality and high plant availability, the proven hot/wet extractive measurement technology additionally allows reliable measurement of SO_2, HCl, and NH_3.
The system configuration can be flexibly adapted to meet specific customer requirements, enabling the measurement of different combinations of gas components as needed.

SCPS: Gas analysis under very harsh conditions, directly on rotary kilns





Product Description

The SCPS process gas analyzer system is used for analyzing gas concentrations directly on rotary kilns. Rugged sample probes, effective cleaning mechanisms combined with hot or cold extractive analyzer systems, as well as flexible remote maintenance. Endress+Hauser is the only manufacturer that delivers the whole portfolio of products from a single source. The analyzers are configured to measure not only the important combustion parameters O_2, CO, CO_2, NO and, if applicable, CH_4, but also process parameters such as SO_2, HCl and NH_3. Thanks to its minimal maintenance, very high availability, and accurate measured values, the SCPS system really shines, especially when it comes to combustion with high levels of sulfur or chlorine.

At a glance

- Simultaneous measurement of all relevant gas components such as O_2, CO, CO_2, NO_x, CH_4, SO_2, HCl, NH_3
- Rugged and cooled sample probes, can be used up to 1,400 °C (2,550 °F) and 2,000 g/m³ dust
- Up to 98% availability of the entire analyzer system
- Quick service thanks to remote maintenance

Your benefits

- Prevention of system downtimes due to timely detection of problems in the process
- Uniformly high product quality thanks to process control
- Lower energy costs due to an optimized combustion process
- Rugged and proven technology for minimal maintenance work
- High system availability due to harmonized components from a single source
- Quick and capable assistance thanks to remote access and an experienced service team that is active all over the world

Fields of application

- Rotary kilns in cement plants

CE

More Information online

For more information, enter the link or scan the QR code to get direct access to technical data, operating instructions, software, application examples, and much more.
www.endress.com/scps

Technical data

The precise device specifications and product performance data may vary and are dependent on the respective application and customer specifications.

SCPS process gas analyzer system (PGA)

System	**SCPS1100**	**SCPS3100**	**SCPS3300**
Gas extraction components	SCP1000	SCP3000	
Analyzer system	MKAS		MCS300P HW
Measured components	CO, CO_2, NO, SO_2, CH_4, O_2		CO, CO_2, NO, SO_2, CH_4, O_2, HCl, NH_3, H_2O
Max. number of measured components	Depending on integrated analyzer		Up to 6 gas components simultaneously and O_2
Measurement technology	Cold-Extractive		Cold-Extractive, Hot-Extractive
Probe tube cooling	Oil-cooled	Water-cooled	
Probe cleaning	Back purging	Back purging with high-pressure shock blower	
Rotation drive	–	✔	
Measuring ranges	Measuring ranges depend on integrated analyzer and application	Depending on integrated analyzer	More than 60 measuring components available, up to 6 gas components simultaneously and O_2
Process temperature	≤ +1,400 °C (2,550 °F)		
Ambient temperature	– 20 … +55 °C (–4 … +131 °F)		
Dust load	≤ 2,000 g/m³		
Conformities	CE	EN 60204-1 & CE	
Enclosure rating	IP 54		
Power supply			
Voltage	3-phase: 400 V, 50 Hz		
Power consumption	approx. 3.5 kW		
Operation	Via Siemens or Allen-Bradley control unit		
Auxiliaries	Instrument air: 6 bar (87 psi), free of dust, oil and water		

Order Information

Our regional sales organization will be glad to advise you on which device configuration is best for you.
All continuous emission monitoring systems (CEMS), process gas analyzer systems (PGA) and liquid analysis systems can be ordered combined and on request for all shelter types.

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