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The background of the slide is a photograph of a factory floor. In the foreground, there is a long, blue conveyor belt or assembly line. Above it, there are various pieces of machinery, including what looks like a robotic arm or a sensor unit. The lighting is industrial, with overhead fluorescent lights. A large, semi-transparent blue rectangle is overlaid on the right side of the image, containing the text 'smartGAS N2O gas sensor white paper'. The blue rectangle has a decorative pattern of white dashed circles of varying sizes in the upper right corner.

smartGAS
N₂O
gas sensor
white paper

**Ambitioned to make
earth a safer place.**

NDIR Gas Sensors for N₂O in Applications of Industry, Medical Use and Emission Control

Introduction

Nitrous oxide (N₂O), also known as laughing gas, is an important gas widely used in industry, medical technology, and emission technology. In this white paper, we will explore the applications of N₂O in these areas and highlight the role of NDIR-based sensors in monitoring and controlling N₂O.



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N₂O in Semiconductor Industry

In the industry, N₂O is often used in semiconductor and LCD display manufacturing. It is required to produce high-quality oxide films that serve as electrical insulators in microelectronic transistors. These films are crucial for the function and performance of transistors, which form the basis of modern electronics.



N₂O in Food Processing

In addition, N₂O is used in food processing as a propellant. It is used to foam foods such as whipped cream and aerosol cheese, giving them a lighter and fluffier texture.

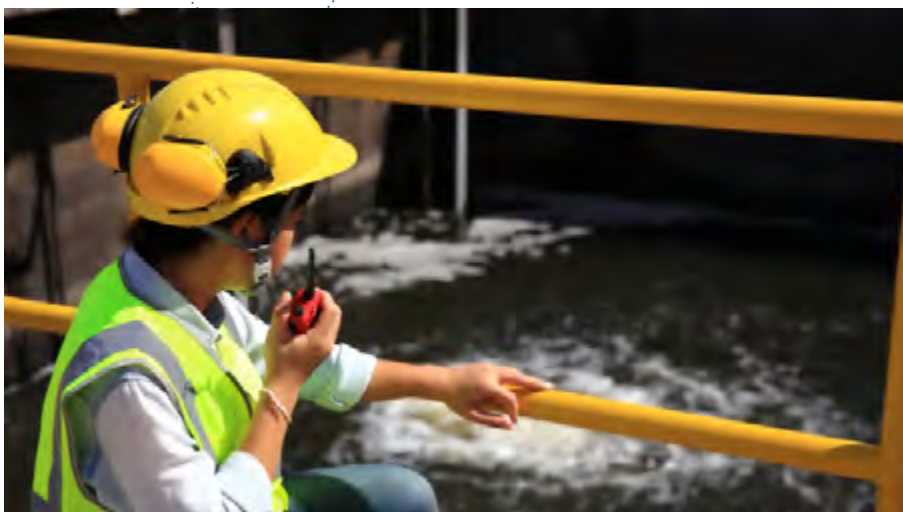


N₂O in Medical Use



In medical technology, N₂O is often used as an anesthetic and analgesic. With oxygen for analgesia in moderately painful procedures such as dentistry, obstetrics, and fractures. N₂O has a rapid effect and is relatively safe to use, making it a preferred choice for many medical interventions and examinations.

Waster Water Treatment



During biological wastewater treatment, N₂O is produced in the nitrification-denitrification phase. By nitrification, ammonia is oxidized to nitrites and nitrates. After this in the denitrification, these compounds are then converted into nitric oxide and nitrous oxide, and some of these are in turn converted into harmless nitrogen gas.

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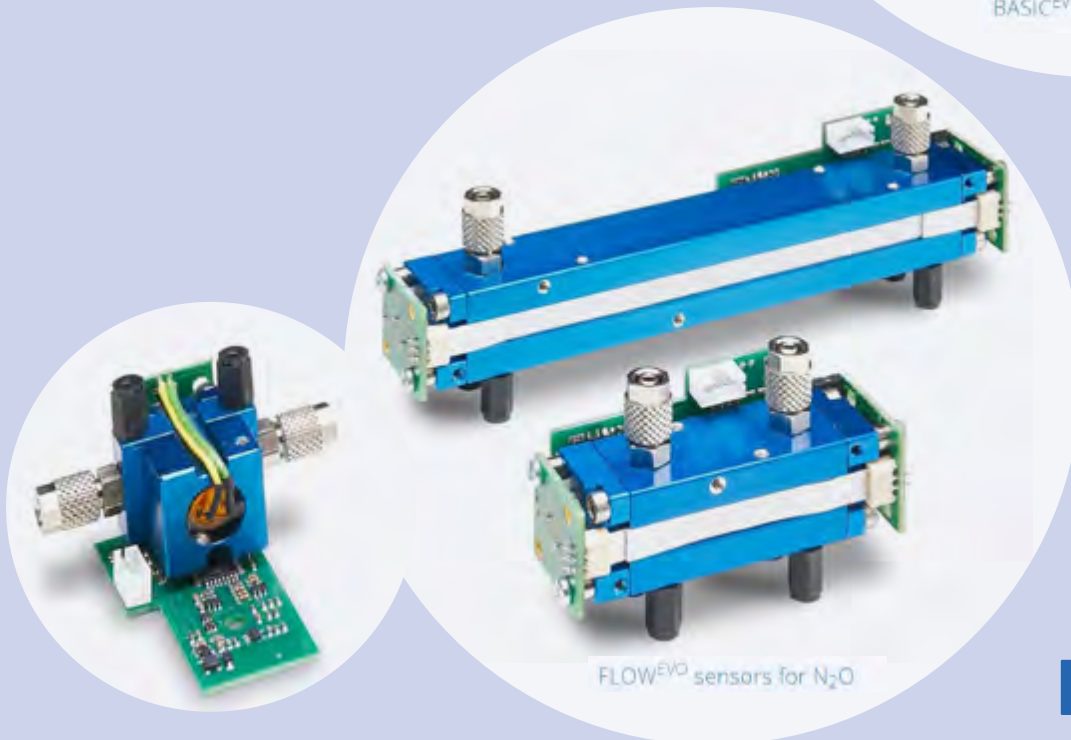
Our N₂O Sensors

smartGAS offers two single gas types of NDIR N₂O sensors: the BASIC^{EVO} and the FLOW^{EVO}.

BASIC^{EVO}

The BASIC^{EVO} is a diffusion sensor specifically designed for indoor air monitoring. It is ideal for leakage monitoring in small concentration ranges (ppm range) as well as for workplace safety monitoring.

The BASIC^{EVO} is easy to handle and offers a cost-effective solution for indoor air monitoring without compromising performance.

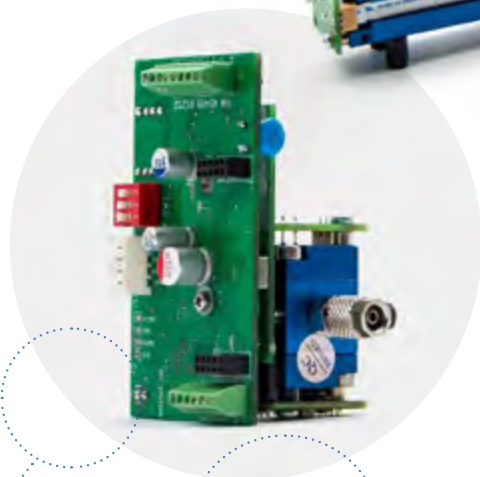
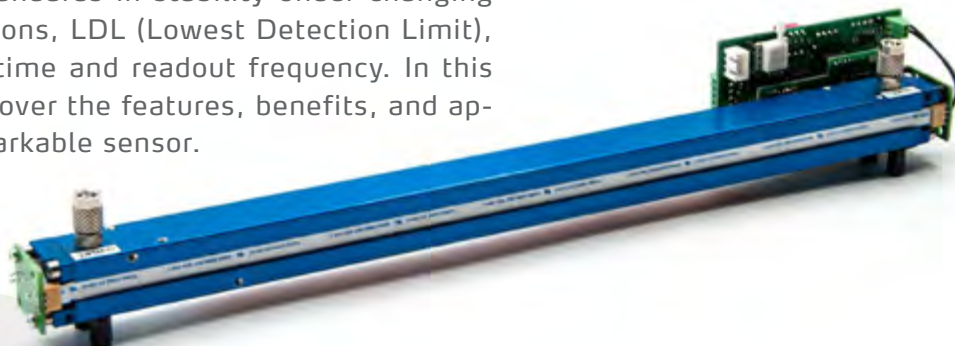


FLOW^{EVO}

The FLOW^{EVO} is a flow sensor ideally suited for process analysis technology and emission monitoring. The FLOW^{EVO} range offers a wide range of measurable gases and excels wherever almost precision and reliability are required. The FLOW^{EVO} combines measurement accuracy with compact design and easy handling.

FLOW^{EVO} PLUS – The High-End Sensor in Analytical Gas Measurement

The FLOW^{EVO} PLUS is the logical evolution of the analytical NDIR (Non-Dispersive Infrared Technology) gas sensors and sets new standards in stability under changing environmental conditions, LDL (Lowest Detection Limit), minimization of T90 time and readout frequency. In this white paper, we'll go over the features, benefits, and applications of this remarkable sensor.



The PLUS sensors of smartGAS combine NDIR technology with the requirements of analytics, which today can only be achieved by means of high-quality analytical instruments.

To this end, smartGAS has implemented the fulfilment of the analytical requirements in hardware and software and extended the FLOW^{EVO} sensor to the FLOW^{EVO} PLUS.



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TRANSMITTER



In the industry, gas transmitters play a crucial role in ensuring the safety and efficiency of processes. They enable continuous monitoring of gas concentrations in the environment, which is essential for compliance with safety standards and the prevention of hazardous situations.

smartGAS offers a range of gas TRANSMITTERs based on the reliable NDIR BASI^{CEVO}. These TRANSMITTERs are specifically designed for applications where ambient gas detection has to be combined with easy installation and test.

In terms of indoor air monitoring, our gas TRANSMITTER are of crucial importance. They enable continuous monitoring of air quality and contribute to ensuring workplace safety. By detecting gas leaks early, potential hazards can be avoided and the health and safety of employees can be ensured. With our gas TRANSMITTERs, users can be confident that they are working in a safe and healthy environment.



CONCLUSION

The monitoring of N₂O is of crucial importance in industry, medical use and emission monitoring. With our NDIR-based sensors, users can effectively monitor N₂O, thus ensuring that they achieve the best results.

About smartGAS

smartGAS Mikrosensorik GmbH is a dynamic German company specializing in the development and production of innovative gas sensors. Our products are based on various technologies such as Non Dispersive Infrared technology (NDIR) or Photoacoustic Spectroscopy (PAS), which enable selective detection of a gas and precise determination of its concentration.

Our sensors are used in various areas such as air and emission monitoring, workplace safety, leakage monitoring of cooling systems and high voltage insulations,

industrial process control, analytical devices for medical gas supply and monitoring, as well as monitoring the ripening processes of fruits and vegetables in storage.

The goal of smartGAS is to simplify the measurement and monitoring of gases through innovative technologies. We are committed to environmental protection and the safety of people, as well as resource optimization in processes, thus actively reducing greenhouse gas emissions. We offer both standard products and custom solutions to achieve the best possible solution with our customers.