



Safeguarding workers
from hidden hazards.

GfG Solutions in the Water and Wastewater Industry

GfG solutions in the field of drinking water and sanitation

For most of us, wastewater treatment plants are nothing more than a minor annoyance: their smell. However, for anyone working in these facilities, the potential gases pose a constant threat.

Within wastewater treatment plants, there are many confined spaces, such as aeration basins, clarifiers, and tanks. These spaces are already hazardous in themselves, but the gases polluting the atmosphere in these wastewater treatment facilities further increase the risks.

Methane and hydrogen sulfide, which are byproducts of the decomposition of organic matter in wastewater, can cause oxygen deficiency, inhalation poisoning, and even explosions. Furthermore, the chemicals used for decontamination and wastewater treatment are hazardous to workers working at these sites. Chlorine, ammonia, and chlorine dioxide are common products in wastewater treatment plants, and in high concentrations, they pose health risks if inhaled.

Eliminating these hazardous gases from the wastewater treatment process remains challenging; workers at these plants must have reliable gas detection equipment, including portable gas detectors.

But we all know that every employer is required to eliminate or reduce occupational risks in order to ensure the safety and protect the physical and mental health of their employees, including temporary workers. To do this, they must take appropriate action and implement it in accordance with general prevention measures, including prioritizing collective protection programs over individual protection programs.

This must therefore be reflected in the installation of fixed gas detection systems on these sites. To this end, GfG provides you with a unique system that can ensure measurements in every hard-to-reach area, such as pumping stations, air handling units, ventilation stacks, and any confined space where intervention is required.



GMA200-MGSS V6

GMA200-MGSS V1

The GMA200-MGSS controller is the result of many years of international collaboration working in this field. Our fixed detection system can ensure the continuous measurement of the following gases: H₂S, LEL of CH₄ or hydrocarbons and the oxygen level. The MGSS also has a wide range of accessories that allow reliable treatment of the air to be monitored. You will find water and dust filters, with an optional condensate evacuation system powered by a peristaltic pump controlled by the MGSS. Gas temperature adjustment is handled via cooling coils—either stainless steel or copper, depending on the nature of the gases being measured. Water stop filters and flame arresters are included when detection is required in a classified area.

The GMA200-MGSS system has also been designed and developed to provide monitoring and control for processes related to reducing hydrogen sulfide levels. Depending on the system infrastructure, it's possible to reduce sulfide production at the source, or, conversely, to reduce the conditions conducive to H₂S formation. In the first case, this involves optimizing the design and operation of the networks and transfer structures; in the second, this involves implementing appropriate treatment:

- » chemical treatment by injection of neutralizing product.
- » air injection blocking the formation of H₂S.

The need to measure and/or detect methane in wastewater treatment plants (WWTPs) is a regular requirement from design offices and operators.

The presence of H₂S will quickly, affect the catalytic bead combustible sensor of gas detectors; this is called sensor poisoning. Contaminating compounds such as hydrogen sulfide, lead, silicones, and sulfur-containing substances, will degrade the catalytic bead and form a solid coating that will prevent the gas from combusting once it reaches the filament. This can be extremely dangerous because the detector and its transmitter will no longer be able to detect the presence of an explosive gas! GfG has designed the IR29 transmitter to detect an explosive gas using infrared absorption. The IR29's patented technology was developed to eliminate potential sensor poisoning. The infrared sensor's gold-plated mirror optics contain two heating elements and up to four detection beams with different optical filters. The measured values from two wavelengths (four wavelengths in total) ensure accurate detection and better resolution. The result of this technology is a complete absence of false alarms. The IR29 transmitter is available in a version with a local display and can also be equipped with options such as compensation for rapid humidity and pressure changes and comes standard with a replaceable dust filter.



CO₂ is one of the gases that has proven to be a highly effective tool for controlling the acidity level of wastewater. In addition, the use of CO₂ reduces maintenance costs since, unlike the stronger acids that

are often used, CO₂ is not corrosive. CO₂ also prevents the release of harmful sulfates and chlorides into the aquatic environment. Another environmental benefit is the elimination of the unpleasant odor problem resulting from H₂S. However, CO₂ is a toxic gas that can be dangerous when coming into contact with it when concentrations exceed regulatory limits. The IR22 D is the optimal solution for this application process.



GMA400/200 Control Panel - NEMA 4X

Oxygen Aeration of Biological Wastewater Treatment Plants

Oxygen doping in biological wastewater treatment plants is used when average pollution levels rise or during seasonal pollution events, as the oxygen supplied from ambient air may become insufficient to meet treatment demands.

This can notably lead to non-compliance with standards but also the release of unpleasant odors or the development of bacteria. Some manufacturers have developed an economical and flexible alternative to traditional aeration methods: pure oxygen doping.

This solution consists of adding pure oxygen to the basins. It is undoubtedly very advantageous, but the oxygen level in the air near the injection zones must be controlled. GfG, thanks to its family of standard or ATEX-certified fixed detectors, will allow you to create reliable detection systems based on electrochemical cell or zirconium probe technologies. This process and GfG gas detection solutions are implemented in many industry sectors such as food, chemicals, pharmaceuticals and paper.



Water treatment also means the production of drinking water

The captured water is often stored and then transported to the relevant treatment unit, using an underground pipe network or aqueducts. Depending on the quality of the water collected, the production of drinking water requires different stages using four types of physical, chemical, physicochemical and biological.

Chemical treatments use chemical reagents that act directly on heavy metals, organic matter, pathogens, and water characteristics.

Chlorine oxidation removes ammonia and iron and prevents algae growth. Ozone oxidation removes iron, manganese, and micropollutants and makes organic matter more biodegradable. Chlorination and ozonation use chlorine and ozone, respectively, as end-of-pipe disinfectants.

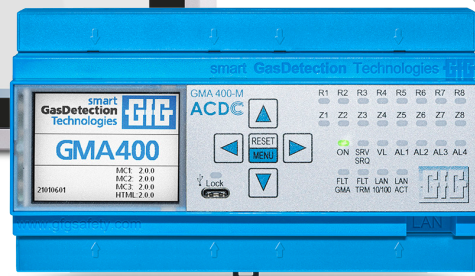
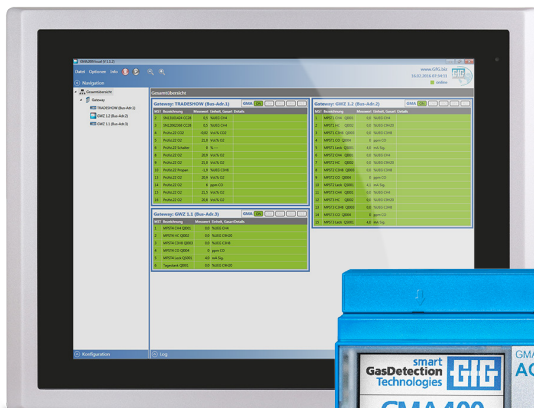


But again, these two processes involve two agents, each of which poses a danger when inhaled. This is why GfG offers equipment dedicated to measuring chlorine and ozone in its range of fixed and portable gas detectors. We have combined our detectors with the best engineering expertise, namely electrochemical cells from the manufacturer SENSORIX. This is a guarantee of quality and reliability for anyone who uses our toxic gas detectors.

But in this field of activity, we must always accept that the risks are many. Even though we have already addressed this point, it is important to remember at all times that in wastewater treatment plants, particularly in confined spaces, the presence of hazardous gases, or the concentration in oxygen sometimes too low, we are often struck by the incomplete knowledge of some technicians, even after training. Some have limited knowledge of the risks associated with gas: they know that hydrogen sulfide (H_2S) is dangerous, but are unaware that it can be lethal and that it can occur suddenly, when it has accumulated in pockets of mud, for example.



Others are unaware of the general behavior to adopt, such as the requirement to have an external supervisor during an intervention. Many do not even know how to differentiate between a confined space and an unconfined space. Staff often forget that a lack of oxygen poses a risk. This is a vicious case, however, because there are often no warning signs before an accident. In response to this observation, GfG has developed systems that allow site or intervention managers to have on a central unit the readings of all portable detectors worn by colleagues during any intervention within a given perimeter (a few hundred yards if the space is clear).



Maintenance and service

The GfG Technical Service team is your proactive partner, from installation to commissioning and support during operation. Our primary concern is that our controllers, transmitters, and detectors contribute to the safety of people in your business. That's why our service is as reliable as our equipment.

What GfG has to offer:

As a global company, GfG offers a comprehensive service. GfG devices are synonymous with safety and quality. If repairs are necessary, they are carried out quickly and reliably. GfG Service consists of trained service technicians who provide you with individual support.

That's why we always advise you directly on-site, whenever possible. This allows GfG specialists to gain a clear understanding of the application and offer you tailor-made solutions. Simply describe your task to us, and we'll find the right solution for you. Each technology is individually tailored to your needs. This ensures the greatest possible safety for both people and systems.

Our services include:

- » Regular maintenance
- » A reliable supply of wear and spare parts
- » Fast repair in case of defect

If you have any further questions or would you like to receive a quote, please contact us directly and we will be happy to assist you.