

AP1033: GfG Solutions for the Wine Industry

Industry solutions

smart
GasDetection
Technologies



Because great wine
deserves protection.

GfG Solutions for the Wine Industry



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GfG solutions in the wine industry

Work accidents in viticulture and winemaking have high frequency and severity rates, higher than the average for the agricultural sector: activities during work in cellars and vats (crushing, pressing, bottling, packaging, etc.), accumulate risks of all kinds.

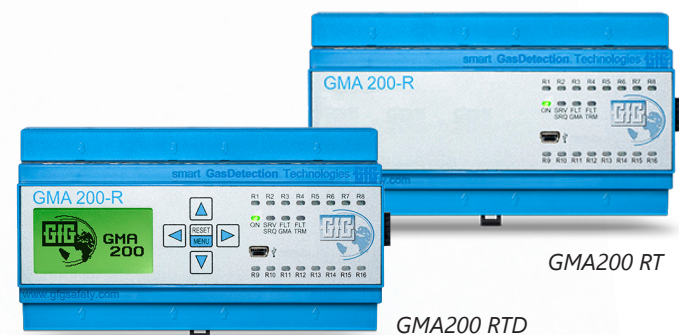
These chemical risks are linked to possible poisoning when working in vats (CO_2 from fermentation) and/or sulfiting (SO_2). But there are also chemical risks during cleaning and disinfection in winemaking cellars. Serious, even fatal, accidents are caused by asphyxiation from CO_2 released during fermentation in vats during the winemaking process. The release of carbon dioxide (CO_2) is dangerous, not only because of the risk of asphyxiation, but also because it is imperceptible (odorless, colorless) and heavier than air, which allows it to concentrate at the bottom of vats, particularly underground vats, or in confined, unventilated areas.

Respiratory tract irritation from SO_2 is caused by leaks during gas cylinder handling and sulfiting operations.

Measures to prevent asphyxiation risks:

Carbon dioxide must be eliminated through adequate ventilation, especially forced ventilation by suction and extraction of air from vats and cellars.

Winemaking presents the main risk, as the release of carbon dioxide (CO_2) during fermentation is significant: one liter of wine produces 44 liters of CO_2 during alcoholic fermentation. A colorless, odorless gas heavier than air, carbon dioxide concentrates towards the ground. If you have dedicated electrical cabinets for controlling your fans, GfG can provide you with remote relay modules that can be installed directly in these cabinets to reduce wiring costs for these controls and thus enable control of all the ventilation modes required for your application.



Poisoning, often fatal, occurs when winegrowers or their employees descend to the bottom of the vat. Humans cannot tolerate more than 3% in a confined environment. In a normal environment, the CO₂ level is 0.05%. Therefore, the carbon dioxide must first be eliminated. Particular attention should be paid to newer, increasingly well-insulated cellars, which are veritable airtight boxes that must be ventilated. With these precautions in mind, it is advisable to always work in a cellar in pairs and, if possible, to equip the person descending into the vat with a harness. CO₂ detectors should also be worn. Many winegrowers have these devices, but this is still insufficient given the number of accidents each year.

Sulfiting is another potentially dangerous step because sulfur dioxide, SO₂, can irritate the respiratory tract. It is important to know that this gas has a TWA (Average Exposure Value) of 2 ppm (parts per million) but also a STEL (Short-Term Limit Value) of 5 ppm. It is therefore necessary to permanently measure the level of SO₂ in the air.

THE SO₂ RISK DURING SULPHITERING

Sulfur dioxide (SO₂) is involved in several stages of the winemaking process. Its antiseptic properties prevent the growth of harmful microorganisms, such as bacteria. Its presence in the bottles therefore prevents the wine from undergoing a secondary fermentation or even producing vinegar.

It is often during the final stage—bottling—that sulfur dioxide is most commonly used (sulfiting), and maximum precautions must be taken. Although corrosive and harmful, sulfur dioxide is primarily a toxic gas classified as R23 and R34, meaning it is toxic by inhalation, causing respiratory irritation and burns.

Methane is also a gas to be cautious of. It is produced by winemaking effluents rich in organic matter. It is colorless, odorless, and explosive at low concentrations. But it's not the only gas that develops under these conditions; it's also possible to see concentrations of hydrogen sulfide in areas near contaminated effluent collection points. H₂S is a very dangerous gas, and its potential hazard should not be underestimated.



IR22 D

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IR22 D



GMA22-MS D



CC22-Ex



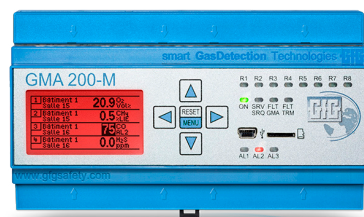
GMA400/200 Control Panel - NEMA 4X



GMA200-MW4



EC22 D



GMA200 MT16



Did you know:

In champagne production, each vintage arriving for pressing is identified by the date and time of harvest. They are pressed separately to maintain maximum traceability of their origin. Between each grape pomace, the press must be emptied and cleaned with water. As part of the sustainable viticulture approach, after pressing, wine effluent (water used to clean presses, grape crates, vats, etc.) is collected for treatment to avoid harming the environment. These are also areas where the measurement of LEL CH₄ and hydrogen sulfide levels can be justified. Indeed, these collection tanks are often installed in the lower areas of production sites.

FANS AND DETECTORS

The only true judges are the G888 and/or G999 portable gas detectors manufactured by GfG. They will be your allies when you need to enter a tank. These first-of-its-kind devices measure CO₂ levels, as well as oxygen and SO₂ levels, before any work is carried out inside the tank. They will reliably indicate whether or not entry is prohibited. GfG provides a wide range of accessories, such as our protective cases, type C floating probes, and sampling hoses for our devices equipped with pumps.



G999C

G888C

Protective Cases for G888/G999



GMA200-MW4



EC22D



CC28 D



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Telescoping Rod

Remember that it is very important to keep your portable gas detector with you during your work, as phenomena and concentrations can change during operations. It's important to remember that you have an obligation to maintain optimal safety for everyone working on your site. Don't take any risks, protect yourself!

Scientific facts:

1. A decrease in oxygen levels does not equate to an increase in CO₂ levels. It is perfectly possible to have sufficient oxygen levels in the air (e.g., 19%) while the CO₂ level is at 10% (fatal risk).
2. Since CO₂ has no odor, it is impossible to detect it by smell, and the absence of a fermentation odor is not an indication either.
3. Natural ventilation of premises does not ensure adequate air renewal. Only forced ventilation can ensure the intake of clean air while simultaneously removing stale air.
4. The short-term limit value (STLV) is 3% for a maximum duration of 15 minutes. It is set at 1% by volume. Above a CO₂ level of 10%, drowsiness and vision problems caused by the gas can prevent a person from protecting themselves from danger.
5. The CO₂ risk in viticulture occurs during work in vats (devatting, racking) and during work in buildings (wine cellars and wineries), especially in low points because CO₂ is heavier than air and flows (from one vat to another, from one vat to low points, etc.). Carbon dioxide comes mainly from the alcoholic fermentation of the must but can also come from other sources (wine effluents, mold, etc.).

6. Peak CO₂ production occurs on the 4th day of alcoholic fermentation.

7. In tanks, 1 in 3 victims are killed while providing rescue services. Unfortunately, it is impossible to perform a rescue while freediving, due to the increased effort required, which results in intense energy consumption.

Our expertise in the viticulture field has enabled GfG to offer a complete range of stainless steel protective housings. The purpose of these accessories is to protect our transmitters from mechanical shocks, but especially from water splashes during floor cleaning operations with a water hose or when using high-pressure cleaners.



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.