EFFICIENT FIRE EXTINGUISHING WITH CARBON DIOXIDE

FirExting®
CO_2 high-pressure
extinguishing systems

WAGNER®

NON-DESTRUCTIVE, HIGH-PRECISION EXTINGUISHING WITH CARBON DIOXIDE

Extinguishing systems with liquefied inert gas from WAGNER make a crucial contribution to comprehensively protect existential assets from fire damage.

Effective technical protection from fire and its consequences are based on multiple interacting measures. It is based on a fire detection which must ensure reliable, earliest possible detection. Once a fire has been detected, suitable countermeasures must be taken as quickly as possible. After all, the shorter the timeframe between when the fire is detected and the extinguishing commences, the more effective the fire and consequential damages can be prevented.

Fight fire without damage

Aside from personal safety, protecting valuables and operational procedures take top priority during the extinguishing process. The extinguishing process must be ideally coordinated to the field of use and may not cause any damage itself. For that reason, WAGNER exclusively uses gas extinguishing for fighting fires with FirExting®. Suitable extinguishing gases can quickly and reliably stop combustion processes without causing damage and leaving residue on buildings, equipment and goods.

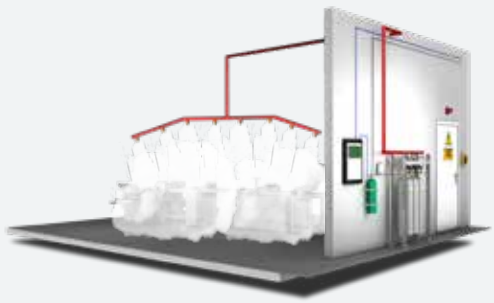
Special solutions with CO_2 extinguishing systems

Carbon dioxide (CO_2) has the best extinguishing effect of all inert gases. It displaces the oxygen around the source of a fire. The CO_2 is stored in liquid form under high pressure and evaporates at the nozzle and is fed into the extinguishing zone in gaseous form. CO_2 has proven itself to be a highly effective extinguishing gas for decades, especially in buildings.

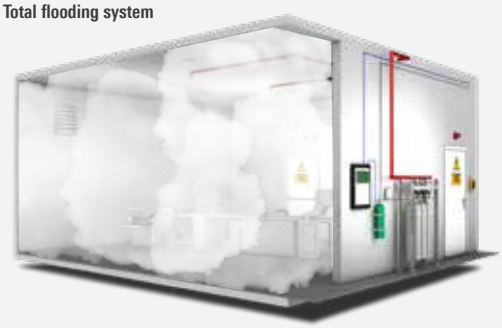
Typical ranges of application:

- Painting facilities and machines
- Industrial systems and protection areas
- Tool machines
- Printing machines
- Hazardous material storage
- Tire storage
- Battery storage
- Electrical installations such as transformers and generators
- Gas turbines
- Hardening plants

Local application system



Total flooding system



FirExting® systems with CO_2 offer ideal protection for open or partially enclosed facilities. CO_2, heavier than air, forms a virtual extinguishing "space" around individual objects to ensure targeted extinguishing and protect buildings and equipment from the effects of fire. CO_2 has also been put to highly effective and dependable use in enclosed spaces.

STOP THE COMBUSTION PROCESS WITH CARBON DIOXIDE

As a rule, fires can only break out if all three components of the fire triangle (oxygen, heat energy and fuel) are present.

Feeding in ignition energy in the form of heat (such as a short circuit) initiates a combustion reaction and causes the fuel and oxygen to begin reacting to one another. Once the reaction has started, fuel is continuously fed in the form of oxygen, giving off heat – a fire breaks out. The carbon dioxide suffocates the source of the fire by displacing the oxygen from the environment. When flooding the extinguishing zone, it evaporates immediately at the extinguishing nozzle.

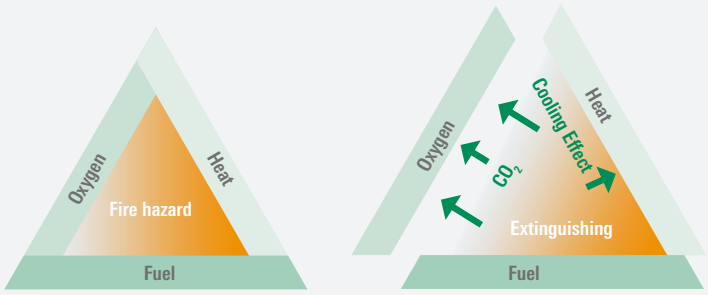
Take the fuel from the fire

When a fire is detected, the gas extinguishing system is triggered. This can take place automatically as well as manually. When flooding with CO_2, the normal O_2 content of 20.9 vol% is reduced through displacement to a risk specific level which stops the combustion process.

Effective protection with carbon dioxide

Carbon dioxide has properties which make it the ideal extinguishing gas under certain conditions: it does not react with any chemical compounds which occur in the usual fire scenarios. Moreover, it does not conduct electricity and thus causes no short circuits during and after the extinguishing process.

The fire triangle: Fire extinguishing through oxygen displacement



Carbon dioxide puts out fires by displacing oxygen from the environment surrounding the source of the fire. The cooling effect can reduce the room and ambient temperature on the short term.

Carbon dioxide as extinguishing gas

- Has the best extinguishing effect of all the natural extinguishing gases.
- Can be used to protect open properties and facilities from fire as well as to extinguish fires in rooms.
- Is stored in space-saving high-pressure cylinders (30 kg or 50 kg CO_2) and monitored for leakage with a weighing system.
- Easy availability, since it is obtained from natural sources such as the ambient air or as a by-product of many technical processes.
- Quick and inexpensive refilling.

FIGHT FIRES EFFECTIVELY – WITH TAILOR-MADE CONCEPTS

FirExting® can be tailored precisely to meet many different requirements. The system is configured based on the risk analysis and the customer's protective goals.

If a fire is detected, the extinguishing system will activate automatically or by manual release. In the pre-warning period, visual and acoustic signals alert persons to leave the protected area immediately. The risk which the toxic effect of carbon dioxide poses to personal safety makes it essential to ensure that no one is in the extinguishing zone before it is flooded with extinguishing gas. Doors and fire protection dampers are automatically closed, and ventilation and air conditioning systems.
After a delay period, the extinguishing zone will be flooded with carbon dioxide within the specified period in order to extinguish the fire once the concentration of extinguishing gas is reached. FirExting® with CO_2 can be used as a single-zone or multi-zone extinguishing system.

In the extinguishing zone

Typical single-zone installation; multiple rooms can also be protected with a multi-zone installation via selector valves as an alternative.

Smoke detectors
Monitor the extinguishing zone, send an alarm to the extinguishing control panel if smoke is detected

Pressure relief
Prevents an impermissible rise in pressure when the extinguishing zone is being flooded

Gas extinguishing nozzles

In the fire extinguishing installation

Acoustic and optical alarm devices

Manual release

CO_2 extinguishing cylinder and control cylinder (N_2)

Fire / extinguishing control panel
Processes fire detection signals, triggers alarm and floods the extinguishing zone after the specified pre-warning period

SAFETY THOUGHT ALL THE WAY THROUGH – WITH US AT YOUR SIDE

WAGNER develops concepts for fire protection – and implements them in each and every specific project as a VdS-certified installer.

WAGNER's mission is to serve its customers entirely from a single source. Our specialists are available to you from your first consulting session on building the system of your tailor-made fire protection solution all the way to ongoing maintenance. This way, we make sure that the solutions we develop fully meet your protection objectives – and comply with all guidelines and approvals which the legislators and insurers require.

FirExting® CO_2 high-pressure extinguishing systems have the following VdS system approval

- CO_2 high-pressure extinguishing system: S398007

WAGNER have the following VdS approvals

- CO_2 high-pressure extinguishing systems: E3000026
- CO_2 high-pressure extinguishing systems as equipment protection: E3000004

Always on the safe side

WAGNER's holistic thinking includes offering the best service possible. This naturally includes supporting WAGNER gas extinguishing systems beyond installation and commissioning. In our maintenance offer, we provide regular system inspections and check for factors such as changes in room use and system configuration. In short: When it comes to safety, you can always rely 100% on WAGNER!

VdS Inspected. Approved. Safe.

WAGNER Group Plant Engineering & Construction

WAGNER Group GmbH (Headquarters)
Schleswigstraße 1–5
30853 Langenhagen, Germany
Phone: +49. 511. 97383-0
E-Mail: *info@wagnergroup.com*

Find your personal contact at
www.wagnergroup.com

WAGNER sets standards in fire protection – with innovative and comprehensive solutions

Fire detection and alarm systems

Very early fire detection systems (TITANUS®)

Active fire prevention (OxyReduct®)

Fire extinguishing (FirExting®)

Hazard management (Visu*LAN*®)