CO₂ fire extinguishing systems
CO₂ is a colourless, odourless and electrical non-conductive gas. In CO₂ systems the CO₂ is mixed with a special identifiable odour.

The extinguishing effect of CO₂ is based on the principle of lowering the oxygen content in the air to a value at which the combustion process cannot be sustained. Cooling is a secondary action of the agent. As a gaseous extinguishing agent, CO₂ penetrates the volume to be flooded quickly and evenly.

CO₂ is a suitable extinguishing agent for example at fires of the following materials or arrangements:
- Combustible liquids and other materials which behave like combustible liquids under fire conditions.
- Combustible gases, provided no ignitable gas / air mixture can be formed after extinguishment.
- Electronic devices.
- Combustible solids such as wood, paper and textiles which require a higher CO₂ concentration and a longer exposure time.

In applications where the discharge of CO₂ may endanger people, the system will be delay released. The discharge of CO₂ is effected after a pre-warning period during which people can leave the room safely. The Kidde Brand- und Explosionsschutz retarding device is a pneumatic delay device. By this means it is ensured that, even in the event of a malfunction in the fire detection panel, the start of the discharge is delayed. The warning to people in the area is made by audible or if necessary by optical signals.

Kidde Brand- und Explosionsschutz CO₂ extinguishing systems
- designed, installed and maintained by highly experienced engineers
- approved by VdS
- achieve rebates on insurance premiums
- available with UL/FM listed system components

CO₂ and the environment
The emission of CO₂ is increasingly being discussed in connection with global warming. The CO₂ for fire extinguishing systems is not specially manufactured, but is taken from by-products of technical processes or from natural resources. Furthermore, CO₂ extinguishing systems prevent the formation of CO₂ and other environmentally harmful materials from fires. There is therefore no need to forbid the use of CO₂ for economical reasons. On the contrary, fire extinguishing with CO₂ systems plays a major role in environmental protection.
Installation examples

Section valves for high pressure systems

$CO_2$ low pressure system with fire detection panel, pneumatic time delay device and section valves

$CO_2$ high pressure extinguishing system with pneumatic time delay device

$CO_2$ low pressure container

$CO_2$ high pressure extinguishing system

$CO_2$ low pressure section valves
CO₂ high pressure systems

The extinguishing medium is stored as liquid in steel cylinders (approx. 60 bar).

The following cylinder sizes are available:

- 8 l / max. 6 kg CO₂ - filling
- 10 l / max. 8 kg CO₂ - filling
- 40 l / max. 30 kg CO₂ - filling
- 67 l / max. 50 kg CO₂ - filling

According to the required quantity of extinguishing medium cylinder batteries (of uniform bottle size) are combined.

Each cylinder is supervised by a scale for CO₂ loss. The response of a scale can be signalled remotely at the fire detection panel via a light barrier.

When fire is identified by the automatic detector (1) or the actuation of the manual push button (2) the fire detection panel (3) will electrically open the alarm and control bottles. The discharged CO₂ activates a pneumatic delay device (6) and sounds a mechanical horn (7) in the protected room.

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Parallel to this an electric horn (4) is actuated by the fire detection control panel. At the end of the object related adjusted delay the extinguishing medium bottles (8) are pneumatically opened and the CO₂ is discharged through the extinguishing nozzles (9) into the room.
**CO$_2$ low pressure systems**

For cost reasons quantities of extinguishing medium from approximately 2 t and above are not stored in single bottles but in a container. The CO$_2$ is cooled down to −20°C in an insulated tank and is liquid at this temperature at a pressure of approximately 20 bar.

The complete tank (8) stands on a scale which responds on a CO$_2$ loss of approximately 10% by weight. The transfer of this signal of a CO$_2$ loss to a fire detection panel (3) is possible via a limit switch. On a fire signal from the automatic (1) or the manual (2) detectors the fire detection panel actuates a solenoid valve via the time delay device (6) and the pneumatic siren (7) is actuated together with the electric alarm devices (4, 5). At the same time the pre-warning time starts to run in a pneumatic and in an electric timer. After the elapse of the pre-warning time in both devices the section valve (9) is opened pneumatically or pneumatically, but not locked. After the elapse of the flooding time, which is normally 120 seconds, the section valve is closed.
All described control functions are related to the extinguishing area in which the fire has been detected. For this reason, a malfunction in another extinguishing area is impossible without a simultaneous alarm and the running of a delay time.

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Subject to changes!
The information in this brochure are only general descriptions and/or performance data which, as described herein, are not always applicable to the specific case of application and/or which can be changed due to further development of the products. The performance data desired will only then have binding character if they are agreed expressively at contract conclusion.

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