

SIEMENS

Building Technologies



Highly innovative safety solutions – to be sure!
Sinorix™ fire extinguishing systems from Siemens.



Fire extinguishing systems protect your business.

A risk you can't afford to take

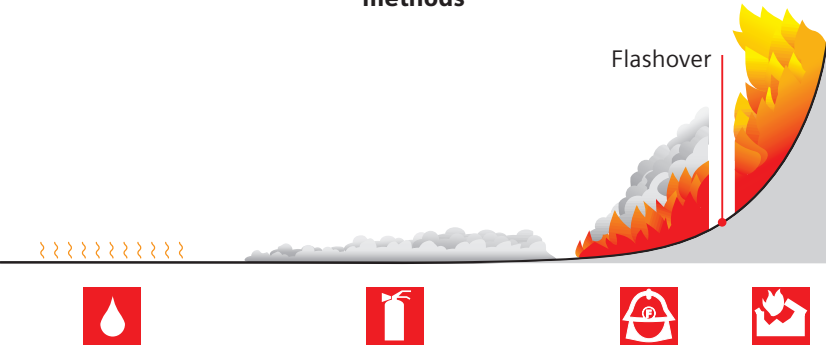
Fires in business premises often have dire consequences: The loss of machinery and equipment, delivery bottlenecks and the loss of market share and customers can lead to financial ruin. This is no exaggeration! International research has shown that 78% of all companies that suffer a major fire are out of business within three years.

Risks that threaten the continuity of a business must be eliminated, so responsible managers make fire prevention an integral part of company operations.

Time as a safety factor

A critical factor in fire prevention is the time between the discovery of the fire and the moment action is taken to put it out. The shorter the response time, the less severe the direct and consequential damage will be.

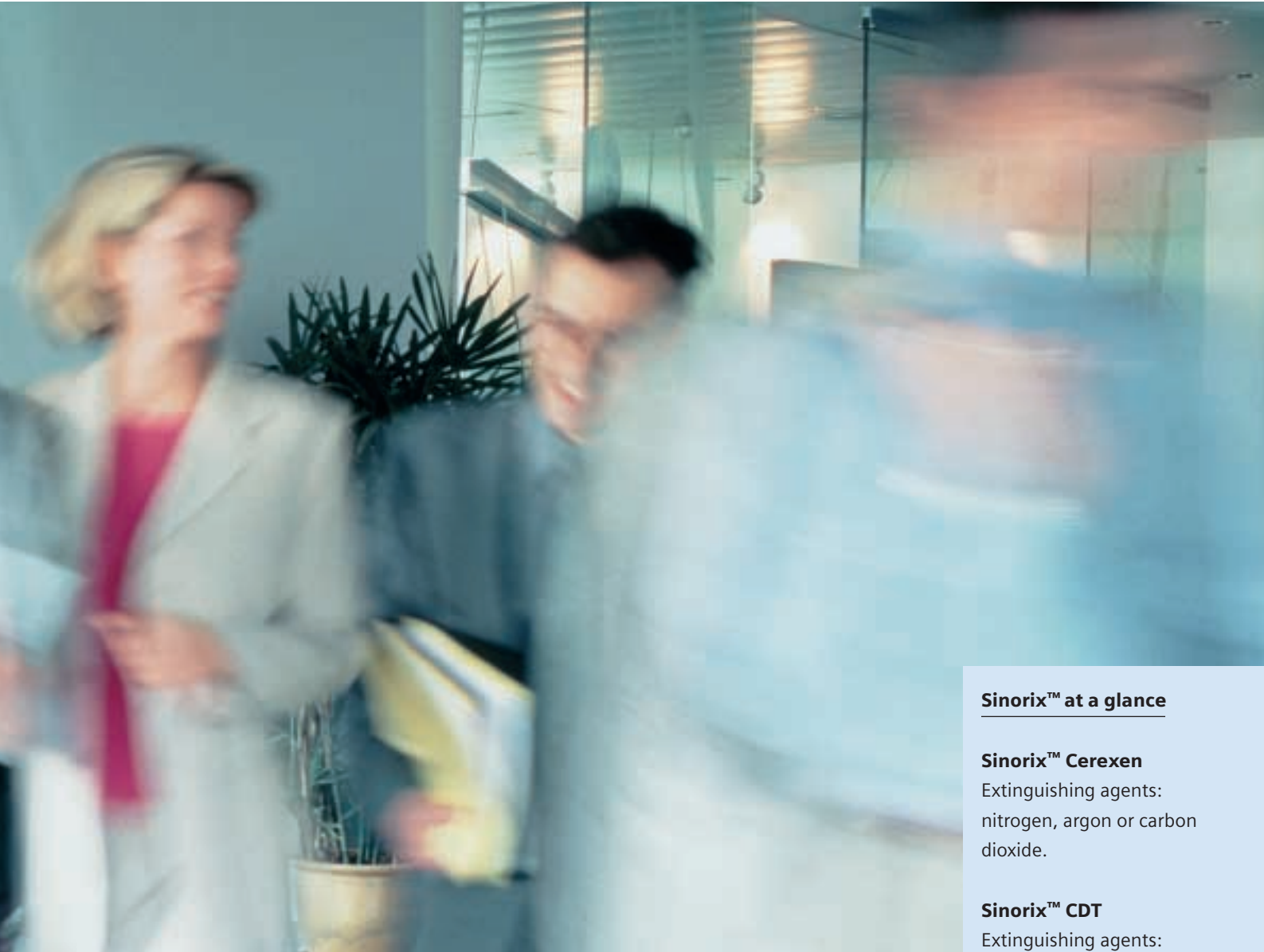
How a fire develops and intervention methods



Early intervention

An effective fire extinguishing system either puts fires out at an early stage or prevents them from starting at all. This is particularly important for businesses in which high risk factors are involved, such as:

- immediate risk of personal injury or death
- very valuable property (inventory, equipment)
- significant loss of income
- danger of explosion



- high risk of fire (hot surfaces, engine testing, generators, transformers)
- highly flammable materials (cotton, flammable fluids)
- poorly accessible areas (cable wall ducts, distributor rooms, underfloor cavities for cables)

Unmistakable detection as the basis ...

Siemens offers comprehensive fire prevention solutions. The cutting-edge technology from Siemens, embodied by intelligent fire sensors that rapidly detect and localize the source of a fire, underline Siemens' market leadership. Reliable fire detection not only lets you intervene promptly, but enables you to tailor the intervention most effectively.

... for successful fire extinguishing

The fast fire extinguishing systems from Siemens perfectly complement their early detection devices. In many cases, an automatic fire extinguishing system is the intervention of choice, enabling you to extinguish a fire rapidly in the earliest phases.

Sinorix™: for fast results

Each type of fire extinguishing system has properties that are particularly effective in specific situations. However, in other circumstances, these properties may be counterproductive.

Thus, Siemens offers not only one universal solution but six different types of fire extinguishing systems. With Siemens, you can be sure of having the best fire extinguishing system, tailored to your particular needs.

Sinorix™ at a glance

Sinorix™ Cerexen

Extinguishing agents: nitrogen, argon or carbon dioxide.

Sinorix™ CDT

Extinguishing agents: nitrogen or argon at a constant discharge pressure.

Sinorix™ 227

High and low pressure technology combined with the world's most widely spread chemical extinguishing agent.

Sinorix™ 1230

High pressure technology combined with a state-of-the-art chemical extinguishing agent.

Sinorix™ GasSpray

Extinguishing agents: fine water mist and nitrogen.

Sinorix™ CerSpray

Extinguishing agent: water vapor spray.



Sinorix™: extinguishing with natural gas.



Sinorix™:
a dry extinguishing system that uses natural gases

Pure nitrogen, argon or carbon dioxide act as the extinguishing agents in the Sinorix™ Cerexen systems. These gases are obtained out of air separation.

Operating principle

The fire is extinguished by oxygen starvation. Normal air is displaced by the extinguishing agent, reducing the oxygen content of the atmosphere in the immediate proximity of the fire to between 10% and 13% by volume. This effectively smothers the fire and prevents re-ignition.

Advantages

- Very environmentally friendly, no residue
- Gases are widely available and inexpensive (local production, no expensive license fees)
- Results are better than or at least as good as solutions that use premixed natural gases
- Low refill costs
- Minimal space requirements thanks to compact extinguishing systems

Applications

While Sinorix™ Cerexen can be used for most applications, it is particularly suitable for working with flammable fluids and for deep-seated fires.

Sinorix™ Cerexen with nitrogen

Nitrogen is the standard extinguishing agent for room protection and can be used in many situations. For example: telecommunications systems, computer rooms, storerooms, cable ducts, generator and electrical switching rooms, archives, strongrooms, museums, cotton storage, military depots, storage of chemical and petrochemical products, engines, turbines, pumping stations and generators. This extinguishing agent can generally be used without risk of personal injury.

Sinorix™ Cerexen with argon

Argon is just as suitable for room protection as nitrogen. However, argon is also an excellent extinguishing agent for special applications where there is a risk of a metal fire.

Sinorix™ Cerexen with carbon dioxide

While it is the most effective extinguishing agent of all the natural gases, there are restrictions on the use of carbon dioxide. Carbon dioxide is toxic in the concentrations required for effective fire extinguishing and may only be used in unmanned locations. Typical applications include: unmanned generator and transformer stations, localized use (oil baths, turbines, kitchen equipment, machines).

Sinorix™ CDT

(Constant Discharge Technology)

Nitrogen and argon can also be used with the unique Sinorix™ CDT valve technology from Siemens. This innovative technology is based on a reservoir pressure of 300 bars. A pressure of 60 bars at the outlet of the valve ensures that the gas is discharged at a constant rate during the entire flow time. This eliminates the pressure peak at the beginning of the extinguishing process. Since the pressure build-up in a room is more even with no peaks, the size of the overpressure valves can be reduced.

Further advantages of the Sinorix™

CDT system

- Controlled gas discharge, regardless of system size
- No discharge pressure variations, unaffected by the number of gas bottles
- All the components downstream of the valve (including the collector and sector valve) are designed for a working pressure of 100 bars (as opposed to 300 bars)
- If gas flow is impeded, the maximum pressure build-up is restricted to 100 bars, even though the reservoir is at 300 bars
- Smaller tube sizes help reduce installation costs
- Fewer gas bottles are required, saving space
- The size of the overpressure valves can be reduced by roughly 2/3rd compared to traditional systems

Applications

This system covers the same range of applications as Sinorix™ Cerexen nitrogen and argon designs.





Sinorix™: extinguishing with chemical agents.



Sinorix™ 227: extinguishing system with HFC227ea

Operating principle

The chemical extinguishing agent, HFC227ea, is stored in liquid form in the storage containers and pressurized with nitrogen. The nitrogen is used to transport the gas to the individual nozzles, where it evaporates rapidly, creating a homogeneous atmosphere in the room. A single HFC227ea molecule decomposes into 10 atoms when exposed to the heat of a flame. The extreme speed with which HFC227ea extinguishes a fire is the result of the sudden expansion in volume, reduction of the local oxygen concentration and the high level of heat absorption involved in this decomposition process.

Advantages

- No risk of personal injury
- Faster than extinguishing systems using natural gases, extinguishing agent release in less than 10 seconds
- Extinguishing agent storage takes up little space as consumption is very low
- Low extinguishing agent concentration needed
- Modular design option using multiple extinguishing agent storage containers in the protected area
- Possible to use existing piping systems, e.g. when upgrading Halon 1301 systems
- No danger of ozone layer depletion (ODP = 0)
- Best environmental compatibility of all the HFCs

25 bar system

The market standard 25 bar technology fire extinguishing system is also within the Sinorix™ portfolio. The main feature of this system is the ability to utilize large storage containers.

42 bar system

Siemens was the first manufacturer to develop a 42 bar high pressure fire extinguishing system that extinguishes fires even faster than the standard 25 bar system.

Storing the extinguishing agent in 42 bar cylinders allows higher nozzle pressures and more complex system designs. This both increases system efficiency and relaxes design constraints when laying out and installing the system. For example, the extinguishing agent storage containers can be installed at a substantial distance from the protected area.

Advantages

- Less than 15 seconds between the start of the extinguishing process and the fire actually being put out
- More consistent and homogeneous atmosphere in the room
- Ability to construct complex systems

Applications

Slow-spreading electronic fires:

- computer rooms
- telecommunication systems
- electrical switching rooms
- electrical distribution rooms
- underfloor cavities for cables

Less suitable for flammable fluids and gases.

Sinorix™ 1230:

Extinguishing system with

3M Novec™ 1230

Fire Protection Fluid*

Operating principle

The Sinorix™ 1230 combines the latest generation of chemical extinguishing agents with the high pressure extinguishing system design (42 bars). The nitrogen is used to transport the gas to the individual nozzles, where it evaporates rapidly, creating a homogeneous atmosphere in the room. A single Novec molecule decomposes into 18 atoms when exposed to the heat of a flame. This results in a slightly reduced concentration of the extinguishing gas needed in comparison to HFC227ea.

Advantages

- No risk of personal injury
- Efficient extinguishing performance due to 42 bar technology and high nozzle pressures
- Faster than extinguishing systems using natural gases, extinguishing agent release in less than 10 seconds
- High environmental compatibility (GWP = 1/ALT (half-life) of 3 to 5 days), no effect on the ozone layer (ODP = 0)
- Extinguishing agent storage takes up little space as consumption is very low
- Low extinguishing agent concentration needed
- Pressure-free transport of the extinguishing gas
- Possible to use existing piping systems, e.g. when upgrading Halon 1301 systems
- Modular design option using multiple extinguishing agent storage containers in the protected area

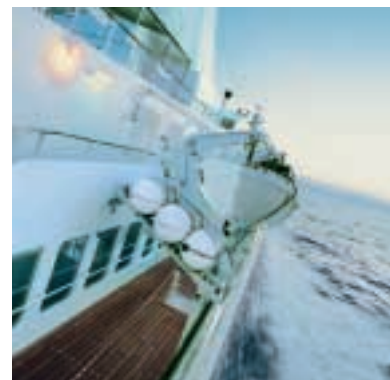
Applications

Slow-spreading electronic fires:

- computer rooms
- telecommunication systems
- electrical switching rooms
- electrical distribution rooms
- underfloor cavities for cables

Less suitable for flammable fluids and gases.

*Novec 1230 Fluid is a registered trademark of 3M™





Sinorix™: extinguishing with water.



Sinorix™ GasSpray: fine water mist and nitrogen for room protection

Operating principle

In the Sinorix™ GasSpray system, water is added to the nitrogen. While the nitrogen brings down the oxygen level, the water emitted into the room as a fine mist cools down hot gases and surfaces.

Advantages

- The nitrogen gas extinguishes the fire, the water provides cooling
- Ideal combination of two effective extinguishing agents, nitrogen and water
- Very effective when used on solid materials, highly volatile fluids and gases
- Washes harmful contaminants out of the fumes
- Simple and reliable
- Inexpensive piping system as the pressure in the pipework never exceeds 60 bars
- Ideal for multi-sector and combined systems

Applications

All applications where the use of water mist is mandatory and fires need to be put out quickly and reliably: archives, cotton storage facilities, turbines, machine rooms.



**Sinorix™ CerSpray:
water spray system for object protection**

Operating principle

Sinorix™ CerSpray uses water as the extinguishing agent and is particularly suitable for object protection. This patented fire extinguishing system allows the droplet size to be adapted to suit the specific fire risk.

The droplets evaporate when they come into contact with the flames, absorbing a significant amount of heat from the fire. This cools the surface and helps reduce the risk of re-ignition. This efficient and highly effective fire extinguishing and cooling technique is the best way of combating open, rapidly spreading fires.

Advantages

- Excellent extinguishing performance
- No re-ignition
- Distributed by a nitrogen propellant or by water pumps
- Inexpensive installation
- Simple and reliable
- Ideal for multi-sector and combined systems

Applications

This can be used in all applications where a fast-acting water-based fire extinguishing system is specified and there are no objections to the use of water, e.g. energy generation systems (turbines, generators, test rigs), pumps, cable ducts, oil-fired burners, the oil and gas industry (pumping stations, generator sets).

Sinorix™ CerSpray is a good alternative for carbon dioxide based fire extinguishing systems in applications where object protection is required.





Siemens: innovation enhancing safety.

Successful research

Siemens has done intensive research into fires and fire-related phenomena for more than 150 years. The company continually simulates and evaluates a broad spectrum of fire scenarios in the largest private sector test laboratory in the world. We started developing and testing new fire extinguishing methods, systems and agents in our special test and development centers in France and Switzerland some 20 years ago. This results in a stream of new innovations that continually redefine industry standards.



Proven products

Siemens develops, manufactures and installs automatic fire extinguishing systems of the highest quality. All products and systems from Siemens are subjected to a series of demanding tests and quality checks, following development in our laboratories and manufacture at one of our production sites. They are then given an official seal of approval by various state-run standards institutes.

Comprehensive range of services

From planning and installation to maintenance, user support and training, we guarantee a comprehensive range of services and consultations.

We work with you to define your needs and requirements, assess your fire risks and then develop your individual fire protection concept.



Close to our customers

Our international network of branch offices, service centers and spare parts warehouses guarantees you access to competent professionals and an appropriate infrastructure wherever you are based.

We offer a broad range of service and maintenance support, including a rapid refill service after activation and a quick standby-service team to ensure that your fire extinguishing system is always ready for use.

A safe investment

With anticipatory modernization programs, Siemens will keep your fire extinguishing system operational for years to come. A typical example is the ability to upgrade existing Halon systems to the equally effective, but more environmentally compatible Sinorix™ design.

Sinorix™ is the responsible choice

Whatever your area of interest, Sinorix™ Cerexen, Sinorix™ CDT, Sinorix™ 227, Sinorix™ 1230, Sinorix™ GasSpray, Sinorix™ CerSpray, we will be pleased to answer all your questions, provide specification details and incorporate your requirements into an effective fire protection concept. Speak to our specialists. For safety in your own interest.



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The information in this document contains general descriptions of the technical options available, which do not always have to be present in individual cases. The required features should therefore be specified in each individual case at the time of closing the contract.

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