

What does effectively
protect against fire?



Intelligent extinguishing solutions from Siemens.
Sinorix H₂O Gas – tailored, efficient, and reliable.

Answers for infrastructure.

SIEMENS



Tailored to your needs – the intelligent solution for double protection

Tailored extinguishing solutions optimally protect the environment, people, and processes from fire. From the overall system design down to the individual components. This is why Siemens offers you an integral solution from one source. It also comprises a comprehensive service portfolio – from risk assessment, system design, installation, and commissioning to maintenance.

Sinorix™ H₂O Gas uses a highly effective combination of two natural extinguishing agents and innovative technology precisely tailored to your specific needs. You get an extinguishing solution that extinguishes fires faster and more reliably than conventional solutions – while minimizing secondary damage.



Sinorix – intelligent extinguishing solutions to keep fire virtual

■ Sinorix – fire protection from Siemens

A perfect fire protection solution requires technology and expertise. Sinorix, the intelligent extinguishing solutions, offer

you the latest technologies based on decades of know-how and experience in fire detection and extinguishing from a global partner. The solutions are tailored to your individual needs to maximize business

continuity. Fires are detected early and extinguished quickly and reliably. Sinorix high-quality solutions protect people, environment, processes, and assets.

Sinorix portfolio overview

■ Sinorix CDT (Constant Discharge Technology)

Innovation based on extinguishing with natural agents to provide controlled and constant gas discharge that allows a reduction of over-pressure flaps by up to 70%.

■ Sinorix 1230

Solution based on the environmentally friendly extinguishing agent 3M™ Novec™ 1230 Fire Protection Fluid with 42-bar technology that enables highest extinguishing efficiency and flexibility in engineering.

■ Sinorix H₂O Gas

Highly efficient combination of nitrogen and water extinguishing technology with an additional positive cooling effect – for secure extinguishing and reliable room protection.

■ Sinorix H₂O Jet

High-efficiency system for effective object protection. With its two-phase flow technology, it generates ultrafine water droplets under low pressure resulting in a high jet length for accurate extinguishing.

■ Sinorix N₂ • Ar • CO₂

Extinguishing solutions with natural agents for maximum flexibility in design and engineering of systems.

■ Sinorix 227

Extinguishing solution based on the globally known HFC 227ea with 25- and 42-bar technology for fast and reliable extinguishing.

■ Sinorix H₂O Spray

Unique two-phase flow technology that generates ultrafine water droplets at low hydraulic pressure in order to control open fires effectively.

■ Sinorix al-deco STD

Object protection system for machine tools offering reliable fire detection and effective extinguishing.

Intelligent means: partnership.
Sinorix – long-term experience from a global partner.



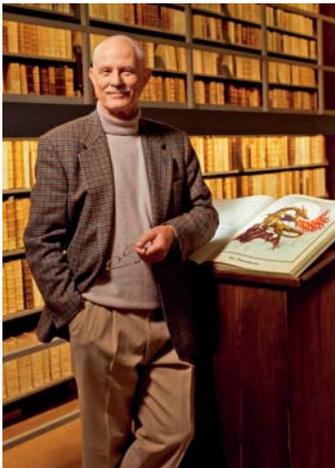
With Sinorix, you benefit from a global partner with experience. We support you with a comprehensive range of services and fully integrated extinguishing solutions tailored to your needs.

Intelligent means: flexible.
Sinorix – adaptable for any risk of fire.



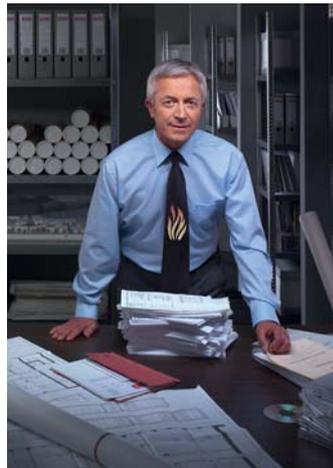
Sinorix offers solutions for every risk of fire and can be adapted to your specific object or room protection requirements in a flexible way.

Intelligent means: innovative.
Sinorix – most advanced technologies for highest effectiveness.



Sinorix innovative extinguishing solutions are based on new insights and inventions and thus deliver cutting-edge technologies with the highest effectiveness. Our expertise and innovative strength are at your disposal around the world.

Intelligent means: tailored.
Sinorix – customized for your unique requirements.



Sinorix extinguishing solutions are tailored to your individual applications. Whether an object or a room, a single or a multi sector needs to be protected, we support you in assessing the risk and selecting the best technology for your business.

Intelligent means: reliable.
Sinorix – for optimized business continuity.



Long-term experience and integrated solutions tailored to your requirements ensure reliable fire protection that supports the continuity of your business processes.

Intelligent means: sustainable.
Sinorix – to protect people, environment, processes, and assets.



Siemens offers you a comprehensive range of extinguishing solutions to protect people, environment, processes, and assets. Siemens supports you today and for years to come to make your investment a long-term win.

Sinorix H₂O Gas – efficient extinguishing plus cooling

■ A customized extinguishing solution

Sinorix H₂O Gas is a high-efficiency combination of nitrogen with a cooling water mist. To make your system as efficient as possible, we tailor it exactly to your specific applications and fire risks – from system design and piping networks to individual components. In an emergency, your system will release a precisely calculated and carefully balanced mixture of nitrogen and water mist over the required extinguishing zone. This ensures that the fire is extinguished quickly and safely. At the same time, Sinorix H₂O Gas also provides reliable protection of both people and the environment – thanks to its natural and nonhazardous extinguishing agents.

■ Reliable control and sustained extinguishing

Sinorix H₂O Gas offers dual protection against smoldering fires as well as deep-seated fires, such as archives, warehouses, machine rooms, turbines, and generators: The combination of oxygen displacement and the cooling effect provides reliable extinguishing as well as lasting reignition prevention, as the water mist rapidly cools the machines, surfaces, and property that were heated up by the fire below their flashpoint. The extinguishing solution requires so little water that it is even suitable for sensitive areas such as libraries and museums.

■ Integrated fire protection

As an expert with many years of experience in extinguishing, Siemens supports you with a comprehensive range of services – from risk assessment, system design, installation, and commissioning to maintenance.

The combination of advanced extinguishing solutions with state-of-the-art fire detection systems and services results in a complete, fast-acting solution that is part of an integral fire protection concept – all from one source and tailored to your individual needs. Needless to say, our solutions comply with applicable international standards and guidelines. Sinorix H₂O Gas has been tested and approved by the most stringent European certification authority: VdS. This makes Sinorix H₂O Gas the first and as of today the only VdS-approved gas/water-combined extinguishing system for room protection – without restrictions regarding application or use of space.

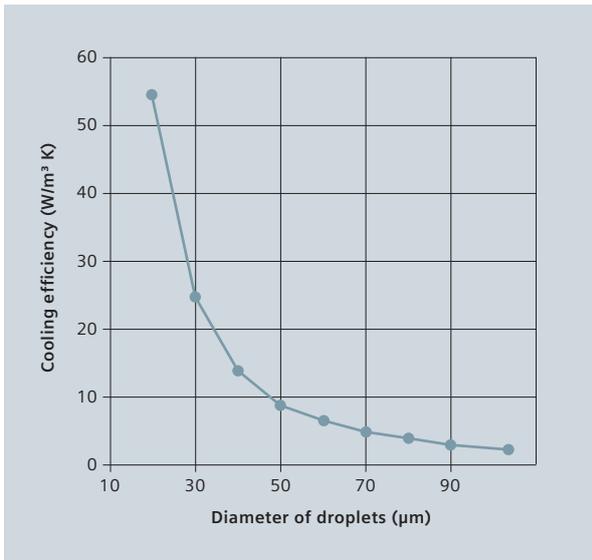
■ Sinorix H₂O – typical applications

- Archives
- Libraries
- Museums
- Vaults
- Uninterruptible power supply (UPS) systems
- Cable ducts and false floors
- Storerooms for flammable liquids
- Rooms for machines and technical equipment
- Turbines
- Closed transformers and generators

Highlights

- Tailored solution from one source, from risk assessment to maintenance
- Ideal solution for smoldering and deep-seated fires
- Reliable extinguishing, effective prevention of reignition
- Highly flexible during planning phase, tailored in engineering
- Approved system according to VdS 2380 (S307002)
- Winner of the Security Innovation Award 2008





Sinorix H₂O Gas – the perfect mixture for double safety

Sinorix H₂O Gas fights fires in two ways: through homogenous oxygen displacement and an additional cooling effect. That's why Sinorix is far superior to many of the common gas and water extinguishing systems – with better extinguishing speed, greater safety, and more lasting effects.

■ An efficient and economical system
 During a fire, Sinorix H₂O Gas floods an area simultaneously with both nitrogen and water mist for ideal protection from combustion, smoke, and heat damage. Both extinguishing agents are carried by the same piping network and are distributed by the same nozzles to the extinguishing area. Nitrogen is used as the extinguishing agent and as the propellant for the water, modifying the dispersion and softening the initial burst of gas. This in turn requires less overpressure flap openings and thus lowers costs. Thanks to the water component, reignition is not possible.

■ Precisely tailored through exact calculation
 The extinguishing system is laid out using a specifically developed calculation program. The program was tested and approved by VdS as part of its system approval. To comply with standards for inert gas systems and to meet your needs, the piping network, nozzles, water supply, extinguishing range, venting, retention time etc. are each given the ideal dimensions for your specific application.

■ Fast extinguishing results
 The gas/water system Sinorix H₂O Gas extinguishes a fire up to 50% faster than gas-only extinguishing systems because of the water mist: Nitrogen lowers the concentration of oxygen, and the water mist reduces the ambient temperature in the protected zone considerably (below the flashpoint of the combustible material).

Chart for evaluating extinguishing agents			
Extinguishing agent	Secure extinguishing	Cools the fire area	No damages caused by extinguishing agent
H ₂ O Gas	✓	✓	✓
Gas only	✓	✗	✓
Water spray and mist	~	✓	~
Sprinkler system	✗	✓	✗

Ratings: yes: ✓, somewhat: ~, no: ✗



Legend

- 1 Fire detection and extinguishing control panel
- 2 Fire detector
- 3 Aspirating smoke detector
- 4 Combined sounder beacon
- 5 Electrical manual actuator for extinguishing system
- 6 Warning display
- 7 Cylinders with nitrogen and water
- 8 Piping network with nozzles
- 9 Overpressure flap



During a fire, nitrogen flows from its cylinders into the gas collecting pipe. Some of the gas is discharged at a lower pressure into the distributor piping network – while some is simultaneously forced into the tops of the water cylinders, moving water via the dip tube to the valve and to the distributor piping network as well. The gas/water mixture generated in the pipes flows to the nozzles and is discharged as a homogeneous stream of water mist droplets and nitrogen. As it is discharged, this mixture fans out through the room, extinguishes the fire, and cools hot surfaces quickly and reliably.

Sinorix H₂O Gas efficiently combines nitrogen with cooling water mist.

Sinorix H₂O Gas is faster than sprinkler systems or water-only extinguishing systems: thanks to the nitrogen, the fire is extinguished quickly. The water mist helps and prevents reignition.

■ Lasting reliability

Water mist and nitrogen diffuse homogeneously over the whole room. The wetting and cooling of surfaces with the water mist effectively prevents the fire from spreading as it is being extinguished, greatly reducing secondary damage. Also, this prevents any material from reigniting on hot surfaces once extinguishing is complete. At the same time, the combined effectiveness of Sinorix H₂O Gas ensures that no deep-lying embers remain unextinguished.

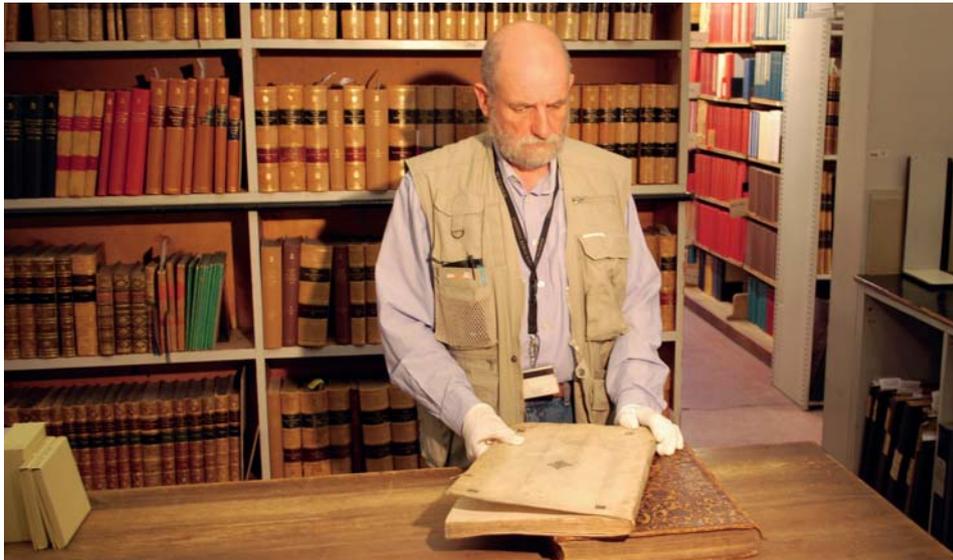
■ Additional protection of property and people

Sinorix H₂O Gas minimizes secondary damage with its fine spraying technology, which requires only 30 – 80 liters of water for each 100 cubic meters of space. It generates ultrafine droplets with a diameter of 10 – 50 µm. The smaller the droplets are, the larger their relative surface area is, and the greater the cooling effect they have. As a result, exposed surfaces are coated with only a very thin layer of water. This is usually harmless, even on electrical equipment, because the water normally evaporates within a few minutes.

Another safety feature: the water mist removes toxic fumes from the air. This protects the health of people in the affected area and prevents smoke damage to property. Moreover, the area can be entered and utilized sooner because the removal of the toxic fumes restores visibility very quickly.

Highlights

- Secure extinguishing of the whole room thanks to homogenous flooding
- Reliable prevention of reignition
- Excellent property protection through minimal water use
- Additional safety for people through the reduction of toxic fumes
- Cost savings through shared piping network and nozzles for water and nitrogen
- Precisely tailored to customer needs thanks to special system design software



Sinorix H₂O Gas offers double protection for smoldering fires as well as deep-seated fires, for example in archives.

Natural, reliable, safe – nitrogen and water

Sinorix H₂O Gas extinguishes fires without side effects: Nitrogen and water are two efficient extinguishing agents that perfectly complement each other. They are environmentally friendly and harmless to people; they also have excellent extinguishing properties thanks to their combined smothering and cooling effect.

■ Nitrogen – highly effective

Nitrogen is chemically inert, giving it excellent extinguishing properties for the three major types of fires: A (solid materials), B (flammable liquids), and C (flammable gases). The density of nitrogen is roughly equal to the density of air, so the extinguishing gas and the air in the room blend perfectly. Thus, the needed concentration for effective extinguishing can be maintained for a long period of time.

■ Water – efficient and cooling

Water is chemically neutral and usually used for class A fires. When sprayed, it quickly dissipates a lot of heat, cooling the materials below their combustion temperatures. The smaller the droplets, the bigger the specific surface of water and the better the evaporation and cooling effects. This reduces damage and prevents heat-related ignition of

flammable materials. As it evaporates, the water's volume expands 1640 times, displacing oxygen close to the fire. This effect offers an additional safety feature.

■ Completely safe for people and the environment

Neither nitrogen nor water present any environmental or health hazards – nitrogen constitutes roughly 79% of the atmosphere. They do not harm the ozone layer or contribute to global warming, nor do they create any harmful reaction products when they mix during the extinguishing process. If the fire itself did not create any toxic fumes, you can easily air out the affected area using ventilation systems or opening windows.

Highlights

- Superior extinguishing: excellent smothering effect of both agents
- Excellent extinguishing properties for fire classes A, B and C
- Cooling of surrounding area prevents fire from spreading
- Air and surface cooling minimizes damage from heat radiation
- Additional protection through oxygen displacement when the water evaporates
- Presents no hazard to human health or the environment
- Simple ventilation may be possible once the fire is extinguished

Technical overview

Sinorix H₂O Gas extinguishing solution

Extinguishing agents	Nitrogen (N ₂) and water (H ₂ O)
Nozzle pressure	10 – 60 bar
Droplet speed	50 – 150 m/s
Droplet size	10 – 50 µm
Coverage from each nozzle	30 m ²
Piping network	Galvanized steel pipes, designed for 60 bar operating pressure
Amount of water	0.3 – 0.8 kg/m ³ (according to risk of fire)
Applications	Class A, B, and C fires
Flooding time	60 – 120 s
Approval	VdS (S307002)

Success stories

■ The Royal Archive, Copenhagen, Denmark

The goal was to protect the old building of the Royal Archive in Copenhagen – which is more than 400 years old – and historic documents against fire. For an effective protection, a large-scale extinguishing system was required but only limited space was available.

Siemens was able to offer a fire safety solution tailored to the specific requirements and risks of fire. The extinguishing solution Sinorix H₂O Gas offers optimal protection for the irreplaceable values.

It releases a precisely calculated and carefully balanced mixture of nitrogen and water mist over the required extinguishing zone in an emergency. This ensures that a fire is extinguished quickly and safely.

■ The Royal Library, Copenhagen, Denmark

The Royal Library in Copenhagen was looking for a reliable solution to protect their valuable, irreplaceable collections against fire in the new storage building. A comprehensive solution tailored to the special needs of books and documents was required. The Royal Library was very

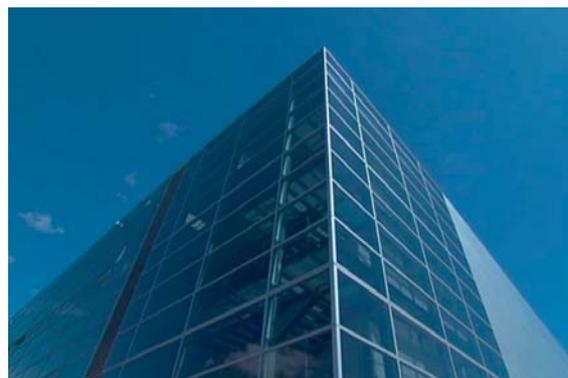
thorough when evaluating the proper extinguishing solution. A team with consulting engineers and fire department representatives supported them.

Finally, Sinorix H₂O Gas was chosen as the ideal solution as it offers double protection: nitrogen extinguishes the fire efficiently and water mist prevents from reignition.

The Royal Archive, Copenhagen



The Royal Library, Copenhagen



Answers for infrastructure.

■ Megatrends driving the future

The megatrends – demographic change, urbanization, climate change and globalization – are shaping the world today. These have an unprecedented impact on our lives and on vital sectors of our economy.

■ Innovative technologies to answer the associated toughest questions

Throughout a 160-year history of proven research and engineering talent, with more than 50,000 active patents, Siemens has continuously provided its customers with innovations in the areas of healthcare, energy, industry and infrastructure – globally and locally.

■ Increase productivity and efficiency through complete building life cycle management

Building Technologies offers intelligent integrated solutions for industry, commercial and residential buildings and public infrastructure. Over the entire facility's life cycle, our comprehensive and environmentally conscious portfolio of products, systems, solutions and services in the fields of electrical installation technology, building automation, fire safety and electronic security, ensures the:

- optimum comfort and highest energy efficiency in buildings,
- safety and security for people, processes and assets,
- increased business productivity.



Siemens Switzerland Ltd
Industry Sector
Building Technologies Division
International Headquarters
Gubelstrasse 22
6301 Zug
Switzerland
Tel +41 41 724 24 24

The information in this document contains general descriptions of 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.

3M and Novec are trademarks of 3M Company.

© Siemens Switzerland Ltd • Order no. 0-92201-en • 1,50907