



SIEMENS



Maximum uptime and optimum fire safety for your data center

Integrated and tailored fire safety solutions from one partner

Answers for infrastructure.



Complete solutions for a safe data center – with a single partner

Data centers are critical as the heart of many companies' information infrastructures. No company can accept the failure of its networks and servers because no business can afford downtimes or the loss of irreplaceable data and market presence. For some industries, even one or two hours of downtimes can be devastating. That's why it's important to provide your data center with the highest level of safety.

Our fire safety solutions are tailored exactly to your data center's requirements. They offer you maximum safety against all risks of fire and ensure uptime and availability of service. Based on the concept of a single, innovative partner, we provide everything from fire detection to extinguishing, and from system design to installation and after-sales service.

Integrated and innovative safety

Identifying and preventing risks

Data center face many challenges – from managing complexity to improving energy efficiency and meeting safety, security and business regulatory requirements. The risk of fire is particularly high due to the presence of a constant ignition source (electricity) and plentiful supply of combustible materials. Short circuits, due to the extensive cabling, can have serious consequences. The need for a comprehensive air cooling results in a higher air exchange making early detection even more difficult. An integrated fire safety concept is therefore crucial to protect critical data and to ensure uptime.

Integrated concept for more safety

Analyses show that the no. 1 cause for fire safety system failure is the interface between detection, alarming, control, and extinguishing. Early and reliable fire detection and the initiation of appropriate extinguishing measures are critical factors in an effective protection concept. Our comprehensive, one-stop fire safety solutions ensure a perfect interaction of fire detection, evacuation, and extinguishing.

Plus, we take care of your system throughout its life cycle, including risk analysis, project management, and choosing the right systems and the best service concept. For an overall secure and energy-efficient

data center, our integral concept also includes video surveillance, intrusion detection, and access control as well as building automation and energy management systems. All integrated and controlled by one management station.

Unique safety technology

Our solutions offer you the benefits of unique technologies like state-of-the-art Sinteso™ fire detectors and aspirating smoke detectors (ASD) for earliest possible warning, both with a Genuine Alarm Guarantee. The latest key innovation is the silent discharge nozzle technology, which is at the core of our new Sinorix™ Silent Nozzle. It ensures quiet and effective extinguishing in data centers, important for uninterrupted hard disk drive (HDD) operation. The Sinorix Silent Nozzle can be combined with our extinguishing solutions Sinorix N₂, Sinorix Ar, and Sinorix CDT.

Relying on an experienced partner

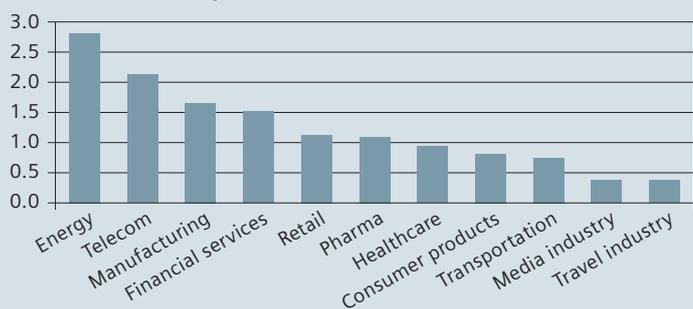
With more than 160 years of experience in fire safety, we understand your specific requirements in terms of prevention, detection, response, and recovery. Our tailored solutions and services comply with the highest safety standards, and incorporate products and systems that meet industry-specific requirements and regulations like e.g. VdS, LPCB, FM or UL.

Highlights

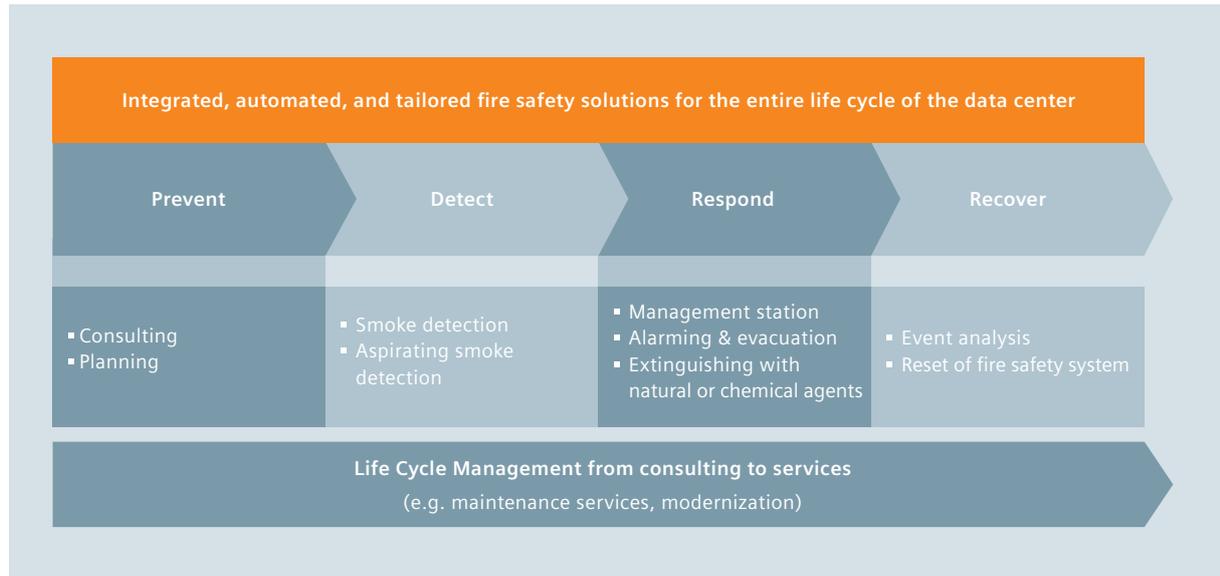
- Expert support by data center specialists with industry- and application-specific know-how
- Fully integrated solutions from fire safety, security, building automation to energy management – tailored to your needs
- Less coordination and reduced costs of ownership thanks to one project responsible
- Ensured safety and uptime due to reliable and integrated fire safety
- Rapid response time thanks to a global service network – close to you
- Green solutions thanks to innovative and environmental-friendly technologies



Cost of downtime per hour in mio. US \$ (Source: Data Center Journal, July 2007)



Siemens' expertise along the entire fire safety process translates into integrated fire detection, alarming, and extinguishing solutions that provide optimal safety for your data center.



Tailored integration for maximum safety

We integrate fire detection, alarming, evacuation, and extinguishing systems into a single, comprehensive safety solution, ensuring safety and uptime for your data center.

Prevention

From the very beginning, we partner with architects, planners, contractors, and building operators to provide comprehensive advice and support during every phase of a project – from the risk analysis of your data center to the specification and evaluation of your fire safety solution.

Detection

Fire detection in data centers can be challenging for traditional smoke detection systems. A typical fire starts slowly with a long period of overheating and smoldering before erupting into flames. For this reason, our solutions combine extremely fast and reliable fire detection with Sinteso S-Line detectors and aspirating smoke detection on one loop. Sinteso S-Line detectors offer unmatched detection accuracy and quick notification thanks to their **ASATechnology™** (Advanced Signal Analysis). Even under the most difficult conditions, they distinguish between genuine danger and deceptive phenomena, and signal alarm when threat is imminent. For Sinteso S-Line fire detectors even a Genuine Alarm Guarantee can be offered.

If the high ventilation hinders smoke to reach the detectors fast enough, aspirating smoke detection can provide earliest possible warning and minimize the risk of fire damage. Air samples are continuously taken at the danger spots and carried to the ASD device. When smoke particles are detected in the air sampler, a pre-alarm is generated. This saves valuable time for clarifying the cause and for taking countermeasures such as visual inspection on site to enable a smooth shutdown of affected racks or data export, etc. To be on the safe side, we recommend a selective shutdown of the cooling system. S-Line detectors verify the alarm and on alarm confirmation, the extinguishing system is activated.

Control

For a central control and monitoring, we recommend to integrate the data center's fire detection system and other systems into a management station. This allows the monitoring of fire alarms and system faults. It also permits uniform operation of all integrated systems.



Alarming and evacuation

In case of fire, standard alarm sounders and sounder beacons alert people. For a rapid and orderly evacuation, we recommend the voice alarm system E100 with clear voice messages. It is automatically activated by the fire detection system and ensures the evacuation of the danger areas before the discharge of an extinguishing agent.

Extinguishing

After the evacuation, the next task is to close all openings so that the room remains as air-tight as possible for the gas discharge. Now the automated extinguishing system can be triggered.

Technological findings show that HDD operation can be disturbed due to the high noise level generated by automated dry extinguishing systems during the discharge process. That is why we are introducing Sinorix Silent Nozzle which ensures a significantly reduced noise level for disturbance-free operation of HDD before, during, and after the extinguishing process. The special linear nozzle design allows smooth and efficient distribution of extinguishing agent while at the same time offers the same extinguishing efficiency as a conventional system. To ensure the best performance possible with even further reduced noise levels we recommend pairing the Sinorix Silent Nozzle with Sinorix CDT.

Sinorix CDT is ideal for medium- to large-sized data centers. The Sinorix CDT technology discharges nitrogen or argon into the flooding zone at constant mass flow throughout the entire flooding time. This eliminates the peak at the beginning of the discharge and thus lowers the maximum noise level. Thanks to the constant flooding, the cross-section of the pipes can also be dimensioned smaller than with conventional extinguishing systems, and the size of the overpressure flaps can be reduced by up to 70%.

For small- to medium-sized data centers, we recommend Sinorix 1230, a solution based on the innovative 3M™ Novec™ 1230 Fire Protection Fluid. It floods the room within seconds and starts extinguishing the fire, before any electronic equipment is severely damaged. It is harmless for people, without negative impact on the environment, especially on global warming.

In critical applications such as generator rooms, uninterrupted power supply (UPS) systems ensure continuity in case of power cuts. For those systems which represent a thermal risk, we offer Sinorix H₂O Gas based on nitrogen and water. This combines highly efficient nitrogen extinguishing with a cooling water mist. Fires are reliably extinguished and reignition effectively eliminated.

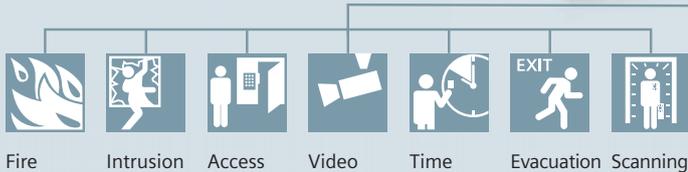
Highlights

- Fast, highly reliable fire detection – thanks to Sinteso S-Line detectors and aspirating smoke detection
- Sinorix Silent Nozzle ensures significantly reduced noise levels for disturbance-free operation of hard disk drives before, during, and after the extinguishing process
- The linear nozzle design allows smooth and efficient distribution of agent, thus ensuring the same extinguishing efficiency as a conventional system
- Central monitoring in the control room – through integration of the systems in a management station



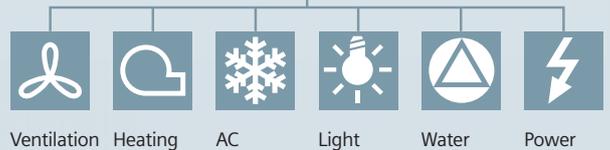
Risk management Assessment Consulting Process integration Training

Services



Fire Intrusion Access Video Time Evacuation Scanning

Fire safety & Security



Ventilation Heating AC Light Water Power

Energy & Comfort

Total Building Solutions – more than technical integration

Overall protection and services

Enjoy overall protection of your data center with a cross-discipline system management from one single partner – Siemens. And for highest system reliability and availability and therefore optimal return on investment, you can rely on our comprehensive service concept.

Your partner for more safety and efficiency

Data centers are full of individual products and systems and the high technical effort linked with different special disciplines requires great expertise. With Siemens, you can benefit from one experienced partner that effectively coordinates these disciplines. The integration of all components, increases the performance and makes your data center safer and more reliable. It also cuts your energy and other operating costs. Our solutions fully integrate:

- Fire detection, evacuation, and extinguishing
- Access control, video surveillance, and intrusion detection
- Building automation and energy management systems

Centralized supervision and alarm handling with a management station provides an optimal event response, supported by a step-by-step guided event response process.

Extensive services for highest availability

We want to ensure maximum system reliability and availability for your data center, providing optimal return on investment. Our dedicated service portfolio covers the entire life cycle of your data center – from alarm management, system maintenance, and extensions to modernization. Our “Advantage Plus” services include a balanced mix of proactive and reactive components, designed to keep your system stable and secure.

- With SafeGuard, our proactive remote service, we will identify critical system deviations before they become problems.
- Combined with the “Guaranteed Repair Time” within 36 hours, we ensure that the fire safety system is up and running at all times.
- In addition, with the Sinorix Door-Fan-Test we will prove the extinguishing efficiency of the system.

Fire control panels



The Sinteso fire control panels convert a fire alarm into actions for alarm notification, evacuation, and extinguishing. The simple user interface with prompting texts lets users quickly check the system status, either locally or by remote access.

Video surveillance



The video surveillance system monitors critical zones such as the entrance area, etc. to record incidents before and after an event.

Aspirating smoke detection



The highly sensitive system – with Genuine Alarm Guarantee – for the earliest possible fire detection in highly ventilated data centers minimizing the risk of fire damage. It is typically applied in closed server racks, false floors, and ceilings, cable ducts and air in- and outputs.

Point type fire detectors



ASA technology offers unsurpassed detection reliability with high immunity to deception. Therefore, a Genuine Alarm Guarantee can be offered.

Extinguishing control panels



XC10 combines fire detection and extinguishing control – either for a single-sector or a multi-sector application. All relevant incidents are forwarded to connected fire control panels. It also interfaces with ventilation systems.

Alarm indicators



If a fire detector that is not easily visible triggers an alarm, the alarm indicator will quickly identify the area in danger.

Sounder and sounder beacon



In a data center, the alarm sounder FDS221 and alarm sounder beacon FDS229 are recommended to alert the occupants acoustically and optically.

Voice alarm system



In case of a fire, the voice alarm system E100 is automatically activated by the fire detection system. It ensures that the data center and neighboring areas are evacuated before the discharge of an extinguishing agent.



Access control

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The access control system provides safe and flexible access authorization, time recording, and badge issuing.

Intrusion detection

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Detection of unauthorized access. Siemens offers a complete range of devices for each kind of risk and application. For the protection against flooding, a special flood detector enables the alarm system to detect water leaks.



Extinguishing with Sinorix CDT

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Recommended for medium- to large-sized data centers, Sinorix CDT technology discharges gas into the flooding zone at constant mass flow during the entire flooding time – eliminating the peak at the beginning of the discharge. This lowers the maximum noise level and the size of the overpressure flaps can be reduced by up to 70%.

Sinorix Silent Nozzle

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Sinorix Silent Nozzle is designed for quiet extinguishing in data centers and server rooms – resulting in disturbance-free operation of hard disk drives during the extinguishing process.

Extinguishing with Sinorix 1230

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For small- to medium-sized data centers, Siemens recommends Sinorix 1230 based on 3M™ Novec™ 1230 Fire Protection Fluid. It floods the room within 10 seconds and starts extinguishing before any electronic equipment is severely damaged.



Servers at net.DE AG, Hanover, Germany



Siemens Beijing Data Center, China

Proven experience

net.DE AG, Hanover, Germany

Internet data center and hosting services are the key aspects of net.DE AG. Uninterrupted availability of their customers' data and servers is crucial. Due to the successful growth of the last years it was essential to establish a new data center with 750 m² and around 2,000,000 watt for up to 5,000 servers.

The combination of the earliest possible fire detection, alarming, evacuation, and automated extinguishing, the integration of security systems such as intrusion detection and access control as well as a comprehensive service package all resulted in the desired integrated safety concept. A highlight of this project certainly is the dimension and complexity of the large Sinorix multi-sector extinguishing system. VdS Guidelines were taken as the basis for planning to offer the highest reliability and safety for net.DE AG. "With Siemens we found a partner that cares about our specific needs and offers an integrated fire safety and security concept for an optimal and sustainable protection of our highly sensitive rooms. This gives us and our customers the certainty that vital data is ideally protected and business processes are secured in case of a fire." says Managing Director Peter Sager.

Siemens Beijing Data Center, China

In 2008, the new environmental-friendly headquarters Siemens' Center Beijing (SCB) in China was opened. It includes the company's largest and most advanced data center in Asia, comprising 630 servers, 100 racks, and covering 490 m² of floor space. The data center was built to provide capacity, performance, and assured business continuity for both all Siemens' Asian subsidiaries as well as external customers in China and throughout Asia.

The tailored solution integrates e.g. fire detection and extinguishing, evacuation, access control, video surveillance, building automation systems as well as a danger management station for central management and an efficient incident response at all times. The building's energy consumption is about 28% less than that of comparable buildings. It utilizes open air cooling and low-energy lighting along with servers needing 35% less energy. For many Asian companies, critical business functions are now assured. The Siemens Beijing Data Center was given the "New Generation Data Center Award 2009", based on the criteria: "Green Energy", "Security, Stability, and Availability".

Various success stories prove our market-specific know-how and expertise.

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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.

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Answers for infrastructure.

Our world is undergoing changes that force us to think in new ways: demographic change, urbanization, global warming and resource shortages. Maximum efficiency has top priority – and not only where energy is concerned. In addition, we need to increase comfort for the well-being of users. Also, our need for safety and security is constantly growing. For our customers, success is defined by how well they manage these challenges. Siemens has the answers.

“We are the trusted technology partner for energy-efficient, safe and secure buildings and infrastructure.”

www.siemens.com/datacenters