



Fire protection solutions for hospitals

*Cool down.
Fire Protection by*

MINIMAX

Putting PEOPLE FIRST

Modern hospitals are complex systems: Lives are saved here, patients are treated and fed – a stable organism with an extensive range of functions. In the day-to-day life of a hospital, all staff make sure that everything runs smoothly and that patient welfare is at the top of the agenda, as patients require rest, protection and assistance. The everyday life of a clinic is not immune to fires but targeted prophylaxis does protect its vital organs.

New challenges faced by hospitals: patients expect modern facilities and attentive care these days. If you had the choice within your healthcare system, you would choose to be treated in a hospital that meets your own personal needs for an environment that is both pleasant and conducive to good health. In light of progressive healthcare reforms, there is also added economic pressure on those running hospitals. Profitability reports continue to emphasise that large hospitals have what it takes to strike a balance between budget constraints and levels of care.

For hospital staff, this means a changed understanding of their roles: patients now see treatment and care as services which must be assessed according to high quality standards and the often very subjective requirements of ill people.

Hospitals these days, more than ever, have to therefore create a working environment where doctors, nurses and carers can focus on their core competencies. The structural design of a clinic can therefore also play a key role. Modern building services relieve and support employees in their work for patients. Modern fire protection provides an appropriate technical framework so that staff and patients feel safe.

This brochure shows how a hospital can be optimally protected against fire hazards. Minimax has therefore developed a wide spectrum of specialised technologies. The range extends from structural fire protection and fire detection systems using stationary, automatic fire extinguishing and special extinguishing systems through to mobile fire protection. All of them provide the safety in a hospital which staff need to work properly and which patients need to convalesce in a relaxed environment.



...OPTIMUM PRO

of all areas

Fire protection solutions recommended by Minimax

Fire protection systems
 Sprinkler systems
 Minifog water mist extinguishing systems
 Water spray extinguishing systems/sprinkling
 Hydrant systems (interior/exterior)
 Foam extinguishing systems/extinguishing monitors
 Special extinguishing systems for kitchens
 Fire detection systems
 Argotec fire extinguishing systems
 MX 1230 fire extinguishing systems (Novec™ 1230)

Public areas*	●	●		●			●		
Patient rooms/nurses' rooms	●	●					●		
Laboratories							●	●	●
Operating theatres/treatment rooms	●	●					●		
Helicopter landing pads				●	●				
Cable rooms/galleries							●	●	
Cable channels		●					●		
Transformers			●				●		
IT							●	●	●
Technical centres/emergency power units	●	●	●				●	●	
Kitchens						●	●		
Waste disposal	●	●	●	●			●	●	

* Entrances, corridors, stairwells, underground car parks, lounges, waiting rooms, food shops, libraries, lecture halls, administration.



TECTION THE RIG

In all possible areas of a building, Minimax smoke detectors can immediately detect fires in their initial phase – allowing time for rescue and evacuation measures to be implemented. At the same time, sprinkler or fine water spray systems automatically tackle the fire before it spreads. A hydrant system and the corresponding standpipes, along with fire extinguishers for manual extinguishing, complete the range of fire protection equipment for the various hazardous areas in hospitals.

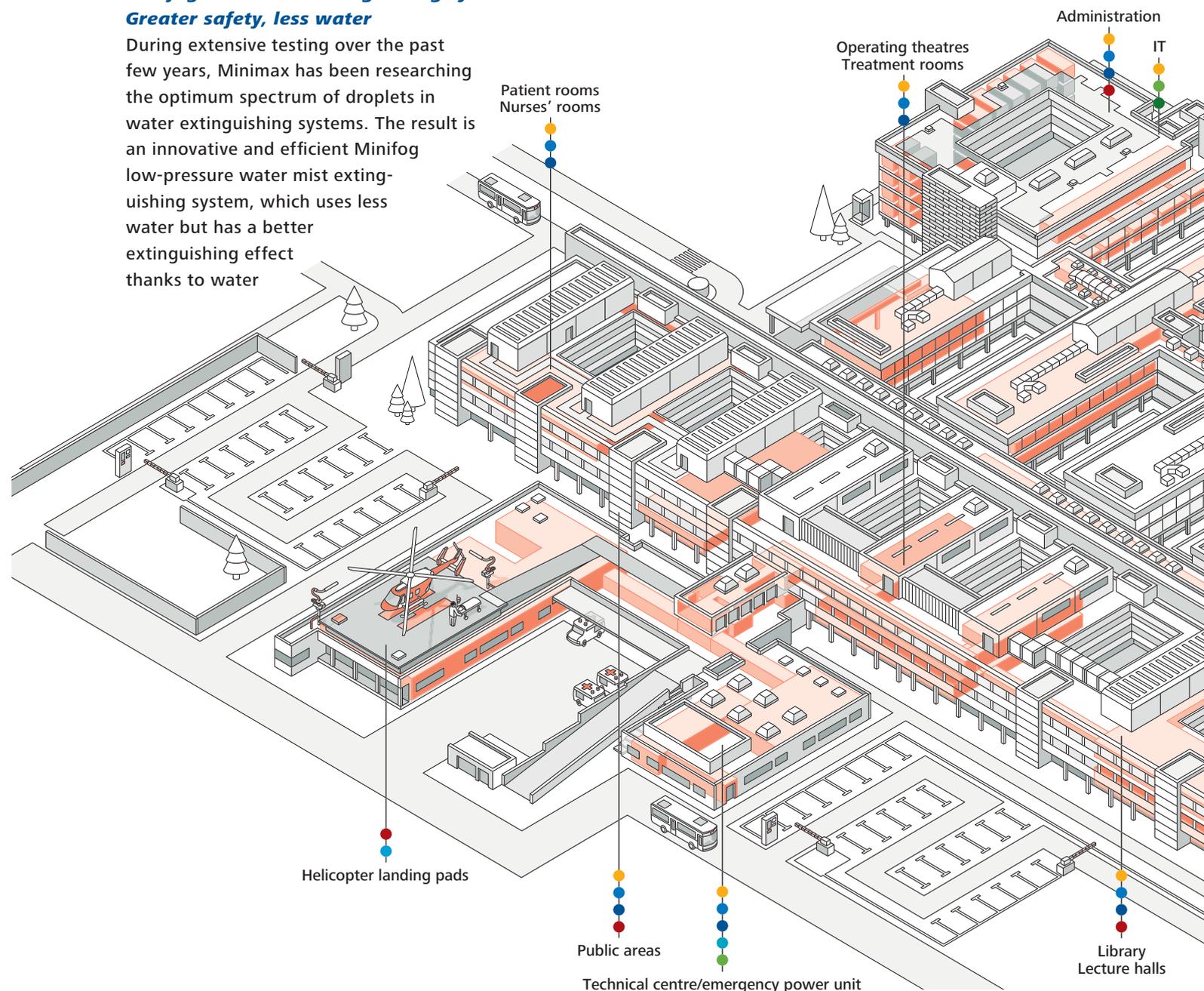
Sprinkler systems: Universal protection

In a wide range of applications where human lives and material assets need to be protected against the effects of fires, Minimax sprinkler systems offer reliable fire protection. This applies to both hospitals and hotels. If a fire starts here, the system is automatically activated during the initial phase, thus preventing the fire from spreading. Only those sprinklers are opened which are in the vicinity of the fire. An alarm is also initiated at a site which is permanently staffed.

Minifog water mist extinguishing systems: Greater safety, less water

During extensive testing over the past few years, Minimax has been researching the optimum spectrum of droplets in water extinguishing systems. The result is an innovative and efficient Minifog low-pressure water mist extinguishing system, which uses less water but has a better extinguishing effect thanks to water

mist. Minifog EconAqua is used in areas that present a low-level fire hazard such as offices or patient rooms. This solution reduces the amount of extinguishing water used in specially optimised (special) sprinklers by up to 85%. The targeted water mist tackles the fire very effectively. Minifog ProCon saves approximately 70% extinguishing water and offers optimum protection for cable channels. Special Minifog impulse nozzles provide a dense water mist which cools the fire and extinguishes it effectively. Operational downtime is reduced to a minimum.



HOT PRECAUTIONS

at the hospital

Water spray systems:

Area-wide spray

Fires start very quickly in the hydraulic systems of waste facilities and in transformers because fuels and lubricants are subjected to high temperatures. Protection should therefore be provided by water spray systems: Triggered hydraulically, pneumatically or electrically, the open nozzles extinguish as fast as lightning. They cool at the same time and reflect the heat – perfect protection for systems and people.

Hydrant systems:

Extinguishing water where it is needed

Wall and external hydrants are merely the visible manifestation of a reliable supply of extinguishing water. Minimax also provides reliable water supply components such as filling and draining stations, which are also adapted to local requirements. The Minimax maximat components assure a reliable supply of water to hydrants and therefore often facilitate the quick intervention of fire brigades, operating staff or building users.

Foam extinguishing systems and foam monitors: **Safety first at the landing site**

Rescuers are at risk here. Kerosene, hydraulic oil and hot turbines on helicopters are a

potential hazard, with fires spreading in no time at all. Hospitals can however take preventive measures: foam cannons, also known as monitors, are highly efficient in extinguishing fires at helicopter landing pads because they also cover burning liquids to make them airtight and cool them down.

Special extinguishing systems for catering kitchens

The KS 2000 compact extinguishing system is designed especially for use in kitchens. A fire in its initial phase triggers the extinguishing process in a matter of seconds. The extinguishing agent, Febramax-S, which has been developed especially for fat fires, protects the area surrounding the fire. The preparation of food nearby continues.

Fire detection systems:

Instant triggering of the alarm

Flames, smoke, flue gas, heat – any fire that's spreading presents a range of different problems. Minimax has the right sensors and fire detectors for fire in all its forms. They all transmit their signals to a fire detection system – instantaneously via data bus. This fire detection control panel can also monitor a large hospital – affording a clear view of everything when it comes to fire protection.

Argotec Ar/N₂ fire extinguishing systems:

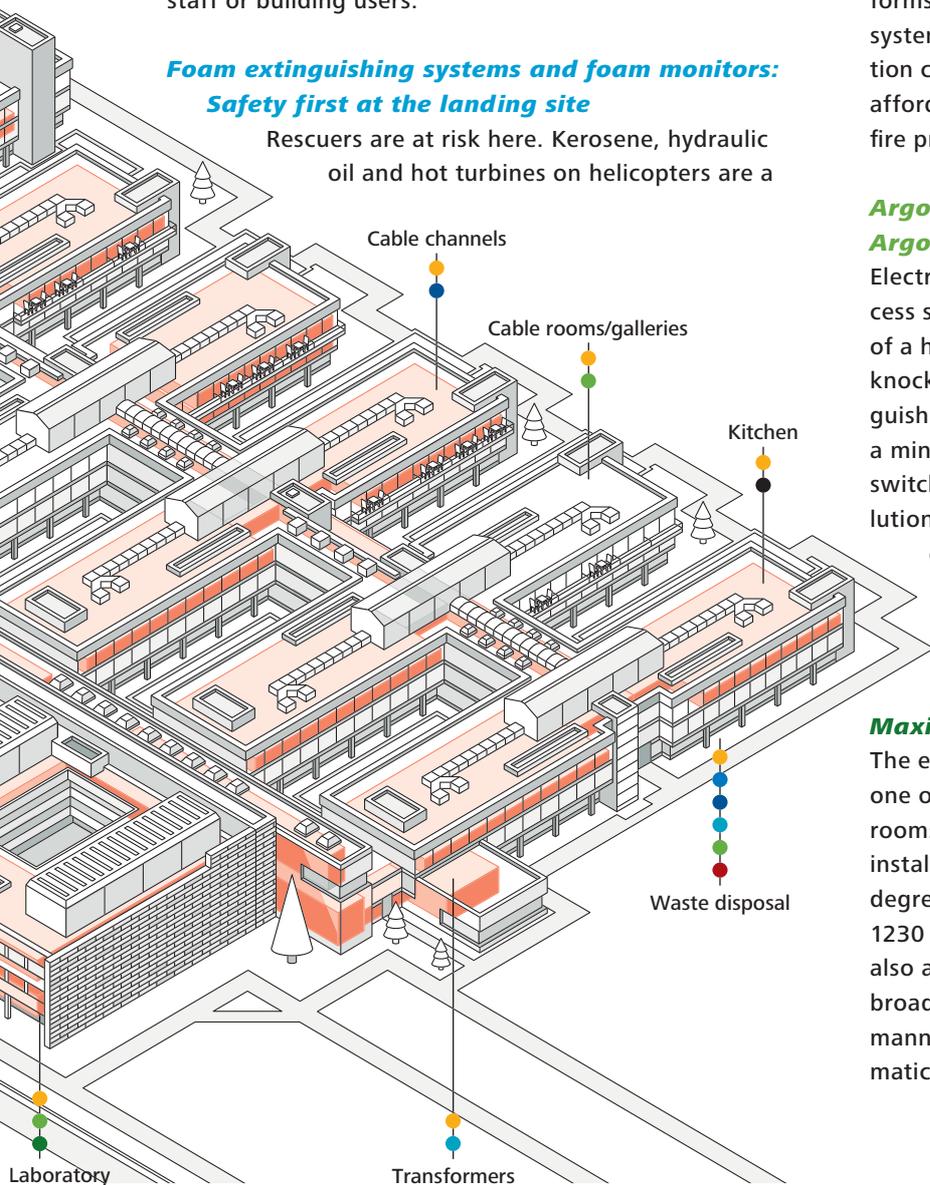
Argon and nitrogen protect electronics

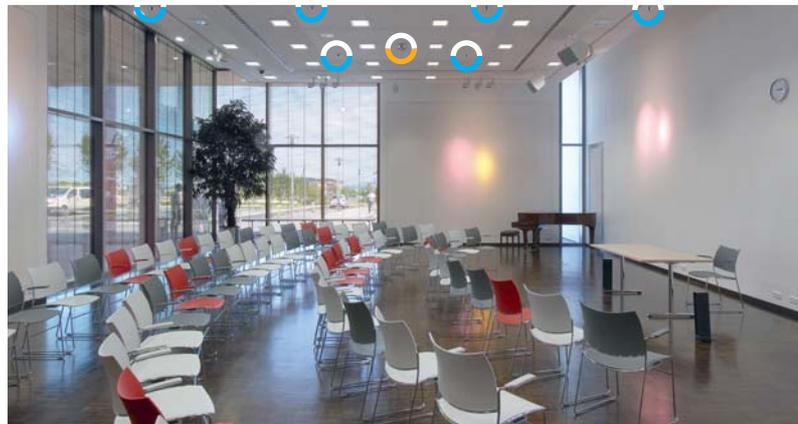
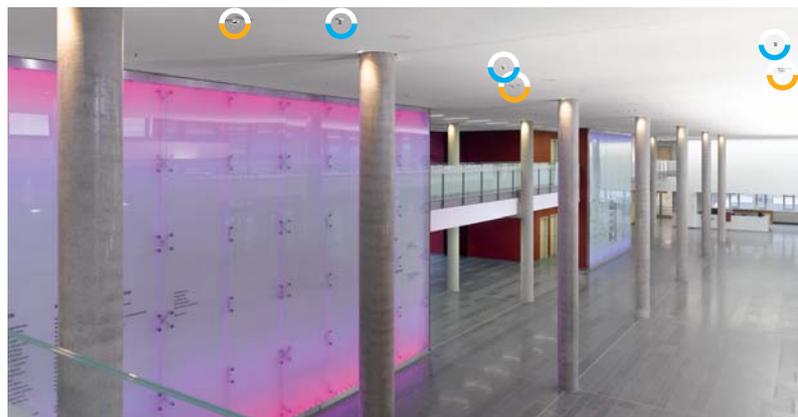
Electrical and electronic switchgears control many process steps. If they fail due to fire, then whole sections of a hospital may come to a standstill. To prevent any knock-on damage from happening during the extinguishing process and to keep any risk to human life to a minimum, Minimax protects walk-in and lockable switch and cable rooms with Argotec extinguishing solutions that use argon and nitrogen. By displacing oxygen, these environmentally friendly and non-toxic gases extinguish electrical fires without leaving any residue.

MX 1230 fire extinguishing systems:

Maximum protection for IT systems

The extinguishing agent, Novec™ 1230, from 3M™ is one of the key innovations of fire protection in IT rooms. It has primarily been developed to protect IT installations – whilst at the same time ensuring a high degree of personal safety and eco-friendliness Novec™ 1230 extinguishes without leaving any residue and is also available as a compact extinguishing system. The broad range of possible applications extends from the manned control consoles in hospitals to a fully automatic data centre.





WELCOME to the public areas

A WARM

The public areas of a hospital are extremely wide-ranging:

Entrances corridors stairwells lounges waiting rooms shops cafeterias hairdressers libraries lecture halls underground car parks and outdoor facilities which are accessible to anyone.

Once a procedure has been carried out on a patient, they are mobilised as quickly as possible and therefore use these areas quite a lot. This speeds up the recovery process and builds up muscle strength. Good lighting and well-designed rooms using harmonious furnishings and artwork boost the well-being of those in hospital and create a positive atmosphere. Fire protection in this instance must prevent against the risk and spread of fire whilst at the same time protecting human lives and equipment.

Risks: Anonymity and high visitor numbers along with carelessness can lead to fires and technical defects or even increase the risk of arson.

Libraries have a high fire load because of the large quantities of highly flammable paper. The fire load in multi-storey and underground car parks is created by leaking fuel and oil lines on cars and by overheated engines.

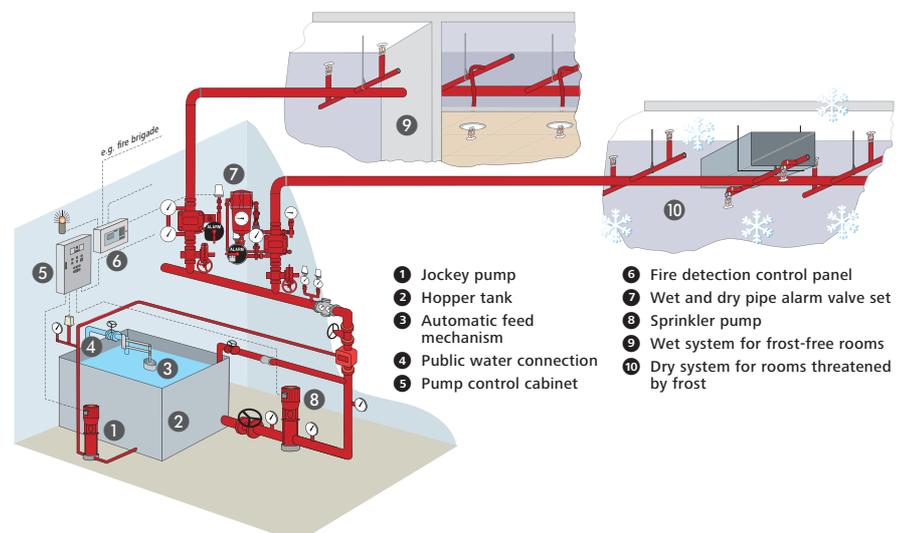
Fire protection: Extinguishing the fire in its initial phase and opening up escape routes is the key fire protection objective.

The images on the left show the discreet ☺ fire detectors and ☹ sprinklers.

Sprinkler systems detect fires, activate an alarm and extinguish fires automatically, thus providing reliable, round-the-clock protection. A network of pipes and sprinklers runs through all areas of the building that need to be protected. When the system is in operational readiness, a liquid-filled bulb seals the sprinkler. The rise in temperature underneath the sprinkler causes the glass bulb to break in the event of fire. The pressurised extinguishing water flows into the sprinkler, where the deflector evenly distributes the water throughout the extinguishing area. The extinguishing water tackles flames and prevents the fire from spreading by cooling the surrounding area. In public areas which also have a low fire load, the Minifog EconAqua water mist systems are used. Optimised (special) sprinklers reduce the amount of water used by up to 85%.

A hydrant system and extinguishers for manual extinguishing complete the range of fire protection equipment for public areas.

EconAqua water mist sprinkler system



RELIABLE PROTECT

Millions have been spent on high-tech medical equipment and systems to make hospitals the therapeutic flagships of the healthcare system. These investments must be protected so that clinics can work unfailingly and uninterrupted. The well-being of patients and staff is also a focal point of fire protection concepts. Minimax has accepted this challenge with a holistic fire protection plan which intelligently links a whole range of modern technology solutions.

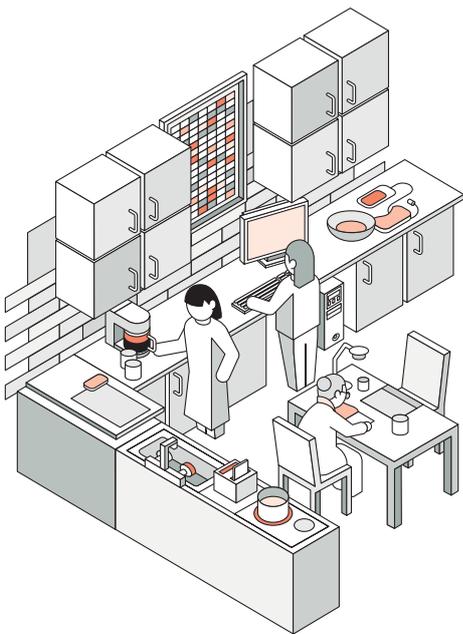
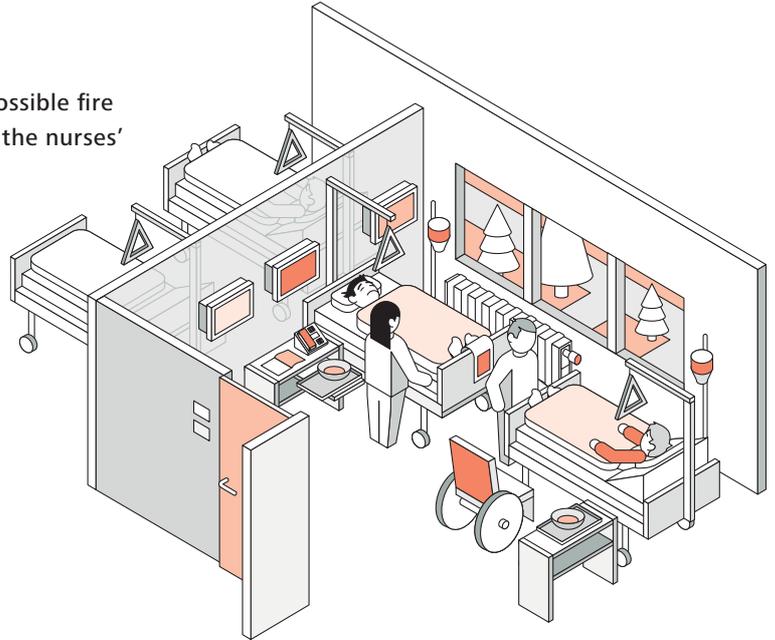
Patient rooms

Bedridden patients rely on outside help.

Minimax smoke detectors keep a watchful eye on possible fire incidents and the signals are directly transmitted to the nurses' room and specialist personnel.

Risks: Carelessness or technical defects can lead to fire in patient rooms.

Fire protection: The extinguishing system with its fire detectors and sprinklers is immediately engaged and the evacuation of patients starts.



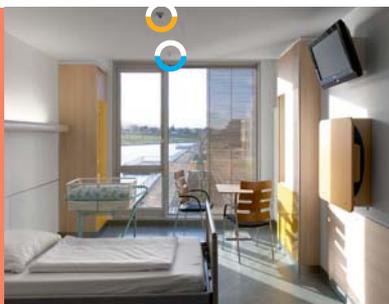
Nurses' rooms

Nurses have a whole range of tasks to fulfil and are constantly kept busy keeping patient records up to date in addition to caring for patients.

Risks: Technical defects or carelessness can lead to fire in the nurses' rooms.

Fire protection: The extinguishing system with its fire detectors and sprinklers is immediately engaged and the evacuation of people starts.

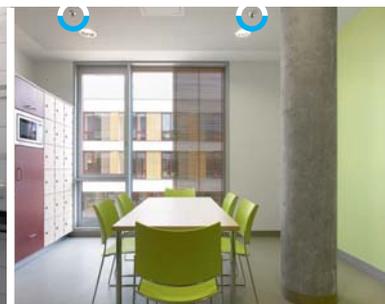
 Fire detector  Sprinkler



Patient room



Patient bathroom



Nurses' room



Treatment room

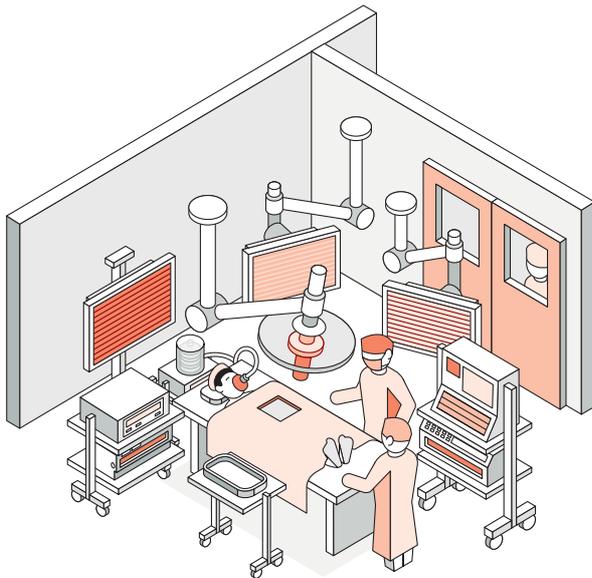
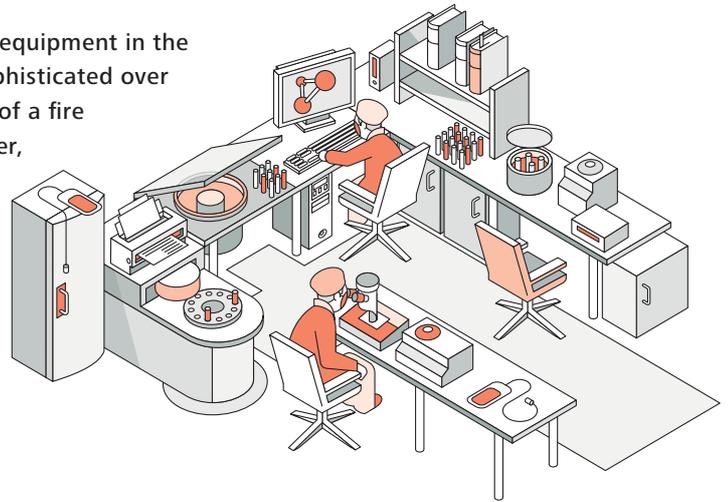
TECTION OF people and technology

Laboratories

The equipment pool in clinical diagnostics, along with the equipment in the laboratories of modern hospitals, has become far more sophisticated over the past few years in terms of quantity and scale. The risk of a fire starting and destroying expensive investments has, however, also increased. Such losses would also affect patients, who would then miss out on critical treatment and diagnostic procedures.

Risks: Electrical defects – strip conductors and cables can heat up and start a fire. Carelessness when handling chemical substances can be another cause. Extinguishing water on sensitive and expensive equipment often damages the equipment completely.

Fire protection: Minimax opts for extinguishing agents which work without leaving any residue. Argotec fire extinguishing systems, for instance, can either work with the non-toxic and therefore harmless gases argon or nitrogen. Or, alternatively, the MX 1230 fire extinguishing system (Novec™ 1230) can be used.



Operating theatres and treatment rooms

The complex technology used in the operating theatre also presents a risk of fire and malfunction:

Short circuits in life-saving medical equipment start fires, the equipment's malfunction puts patients' lives at risk and the fire destroys expensive investments.

Fire protection: The extinguishing system with Praction sprinklers offers double protection against damage. Their structure combines two separately arranged sprinklers. Only when both open does the extinguishing process start. Rooms with highly valuable facilities, e.g. sensitive high-tech equipment, can therefore be protected against the discharge of water and other damage.



 **Fire detector**  **Sprinkler**



Laboratories



Pre-op prep room



Operating theatre



Intensive care unit

DER CONTROL

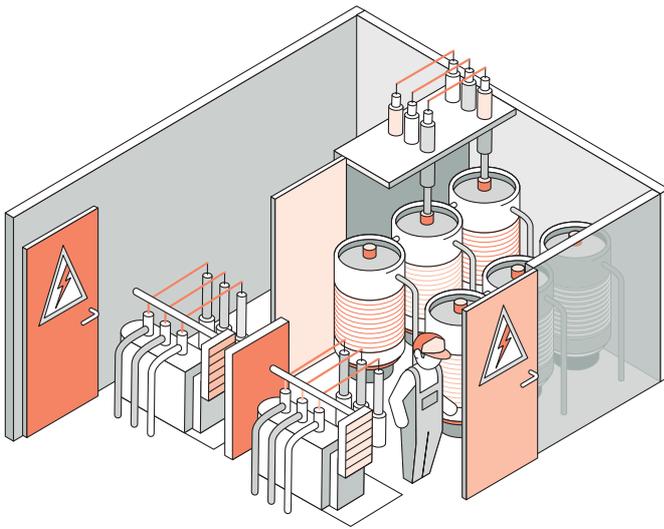
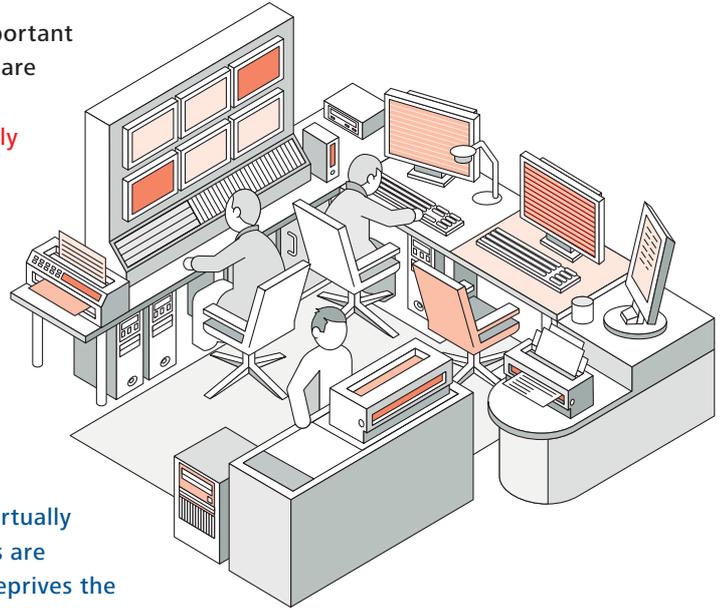
with coordinated fire protection solutions

IT areas

These are now full of computers and servers for saving important data for the administration and treatment of patients, and are especially at risk if there is a fire.

Risks: Faulty or overloaded electronic components can easily cause a smouldering fire or open-flame fire.

Fire protection: The MX 1230 fire extinguishing system can be adapted to each individual area; nozzle holes and container filling quantities are the result of object-specific design calculations and the hallmark of a system which has been optimised down to the smallest detail. Because of the charging pressure of up to 50 bar, multi-zone systems and longer pipes can be installed. No separate room is required to supply the extinguishing agent; this can take place in the protected area itself. The extinguishing agent, Novec™ 1230, is colourless and virtually odourless, and gaseous at room temperature. Its molecules are composed of carbon, fluorine and oxygen. Novec™ 1230 deprives the flame of heat, thereby interrupting the combustion reaction.



Transformers

The energy requirement of clinics is significant, with a safe supply being vital. Hospitals are therefore usually connected to the power supply via their own transformers.

Risks: Short circuits, overheating and leaking oil from the oil-cooled large-scale equipment can ignite. The Buchholz relay on the power transformers reacts in such cases by disconnecting, and usually hands over to a second transformer so as not to interrupt the power supply.

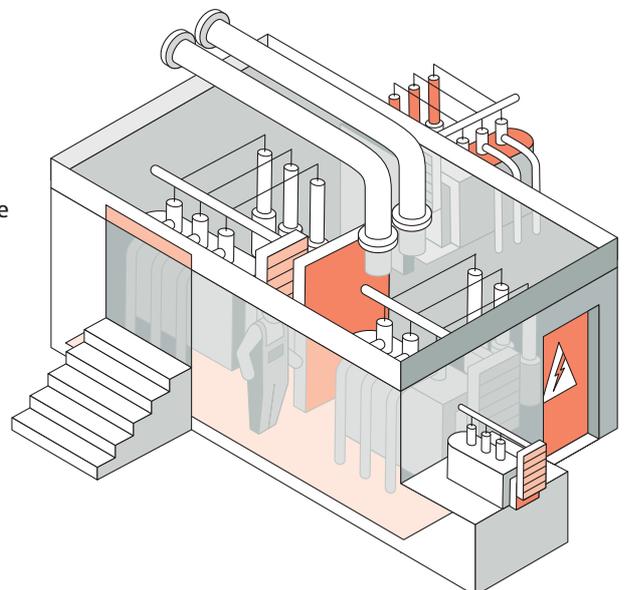
Fire protection: The water spray extinguishing system – activated by the Buchholz relay – extinguishes the defective transformer and cools it down.

Emergency power units and technical centres

Minimax offers additional fire protection solutions for emergency power units, which are aligned in such a way to the installed technology that malfunctions and significant damage are virtually excluded. The hospital can therefore continue to run without interruption, patients are looked after and the technical breakdown is merely a minor incident.

Risks: Fuel, overheated engines and technical defects.

Fire protection: Water extinguishing systems or alternative Argotec fire extinguishing systems limit the damage quickly and effectively.



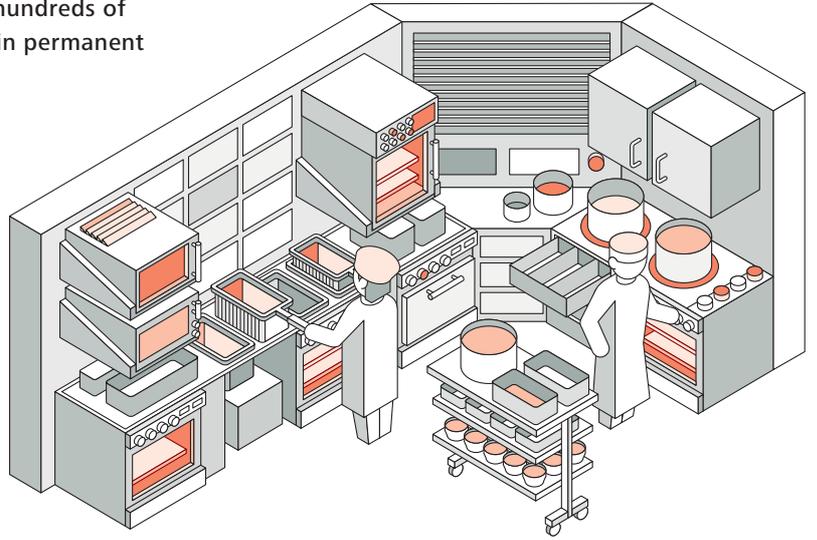
CATERING

Kitchen

Ongoing fire protection. Several meals a day for hundreds of patients and staff – this means the equipment is in permanent use by kitchen staff.

Risks: Processing large quantities of fat and oil at high temperatures. Deep fryers and chip fryers, along with frying, griddle and grill plates, can overheat and start a fire.

Fire protection: Here, the focus is on extinguishing during operation so that work can resume as quickly as possible. The KS 2000 compact extinguishing system is specially designed for use in kitchens. A fire in its initial phase triggers the extinguishing process in a matter of seconds. The extinguishing agent, Febramax-S, which has been developed especially for fat fires, protects the area surrounding the fire. The preparation of food nearby can continue.



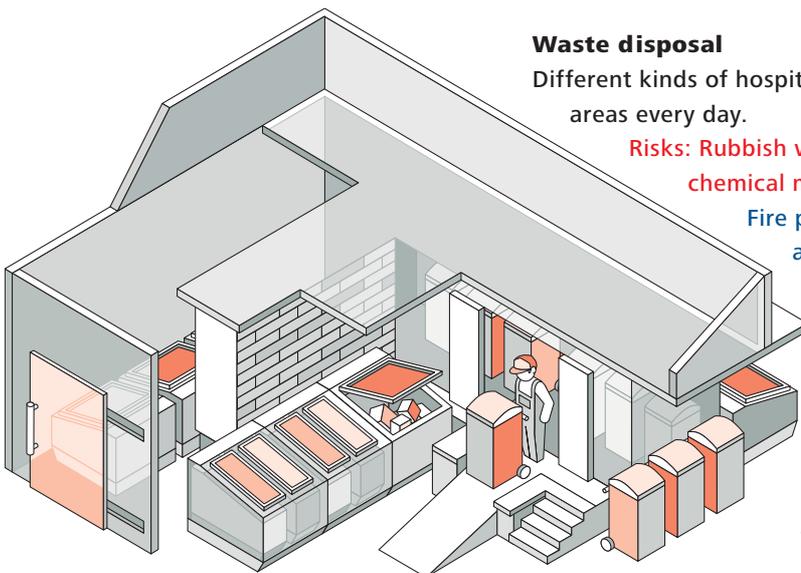
DISPOSAL

Waste disposal

Different kinds of hospital waste end up in the refuse collection areas every day.

Risks: Rubbish which is not separated properly, e.g. organic and chemical materials mixed in with packaging, can easily ignite.

Fire protection: An automatic extinguishing system acts as a monitor. Minimax offers various alternatives. The water extinguishing technology is used for organic materials and packaging. The choice is endless: From the tried-and-tested sprinkler system and the water-conserving Minifog EconAqua technology to the water spray extinguishing system with open nozzles, which is the safest solution in large protected areas. Fire extinguishing systems are used for chemical materials.



EVERYTHING UNDER CONTROL

whenever and wherever

Fire detection systems: optimum overview and high flexibility

Reliable protection against fires requires vigilance. Minimax technology assumes this role in the hospital, 24 hours a day. All fire detectors and extinguishing systems function as part of a network. Intelligent technology evaluates the signals, ensures optimum use of extinguishing agents and notifies staff and operational units. The modern FMZ 5000 fire detection control panel is at the centre of it all and meets all appropriate guidelines.

It is able to ensure that you never lose sight of the situation. It also provides maximum flexibility for technical innovations. The control unit can be programmed to perfectly adapt the system to current and future requirements.



And the hardware is no different: Assorted "Snap and go" function modules offer interfaces for all kinds of detectors, signallers, valves and control units. Minimax is constantly extending its range of modules. The system will therefore still be state of the art tomorrow. The Web module uses a control panel, which can be located anywhere, to display messages on the Web browser of a PC. Basic functions such as malfunction detection and the disconnection of groups via remote diagnosis can also optimise servicing and increase the availability of the fire detection system.

Maintenance and servicing: optimum service for sustainable safety

Regular inspections are a fundamental requirement in order to guarantee the perfect functioning of fire protection systems whilst ensuring full operational readiness at all times. Minimax Service offers the prompt inspection of all fire protection and extinguishing systems in strict accordance with applicable legislation. Such equipment is checked, maintained and, in the event of a fault, repaired with meticulous care by specially trained Minimax staff members. In addition to system servicing, specific initiatives and

programmes exist to ensure that all protective equipment continues to function correctly and corresponds to the latest technological developments – even after years on standby. Legislation requires operators to carry out continuous monitoring procedures on their fire protection systems. If faults are identified, rapid reactions are called for. Minimax offers round-the-clock safety with a sophisticated fault signal management system to ensure that errors and faults are always remedied at top speed, regardless of their location.



TESTIMONIALS

for our fire protection solutions



Johannes Wesling Klinikum Minden



Klinikum Dortmund gGmbH

... and many more.

Overview of our services:

Fire protection consultancy
Fire protection planning
Fire detection systems
Fire detectors
Sprinkler systems

Minifog water mist extinguishing systems
Water spray extinguishing systems
Foam extinguishing systems
Argotec fire extinguishing systems
MX 1230 fire extinguishing systems

Hydrant systems
Fire extinguishers
Maintenance and servicing
24-hour fault signal management
Training

Our pre-qualification number is 101.000 840.

Minimax GmbH & Co. KG
Industriestrasse 10/12
23840 Bad Oldesloe
Germany
Phone +49 4531 803-0
Fax +49 4531 803-248
E-mail health@minimax.de
www.minimax.de



Photos

Front cover: aerial photo, Peter Hübbe
Jochen Stüber, photographer – courtesy of
Johannes Wesling Klinikum Minden

We reserve the right to make technical changes.