NO POWER.

NO DATA.

NO CUSTOMERS.

OxyReduct®

With other fire safety
solutions you must
shut off the power.
Not with our fire
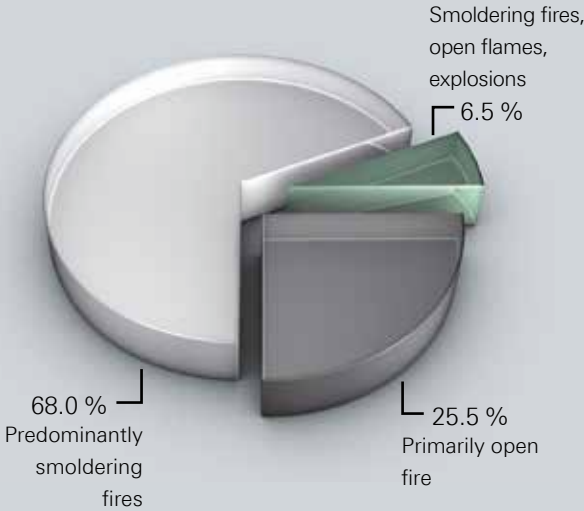prevention solutions.

WAGNER®

WHEN THE FLAMES APPEAR,
IT IS ALREADY TOO LATE.
ARE YOU PREPARED?

Downtimes of mere seconds already limit availability severely. Minutes of downtime can threaten the existence of an entire company.

Computer centers must have availability 24 hours a day, 365 days a year. Thus data security and trouble-free operation are critical. Even a short interruption of operations can not only damage the company's reputation, but also have economic consequences or cause the operating company's market position to be lost. Therefore, the implementation of comprehensive fire protection plans is an increasingly decisive criterion for IT companies to remain competitive.

Cause of fire	Share	
Defective electrical equipment		
and installations	25.5 %	primarily
Smoking	20.0 %	smoldering
Hot surfaces	8.0 %	fires
Welding and cutting	5.5 %	
Points of friction	4.5 %	
Autoignitions	3.5 %	
Radiant heat	1.0 %	
	68.0 %	
Sparks and combustion	3.5 %	Smoldering
Chemical reactions	1.0 %	fires,
Electrostatic discharge	1.0 %	open flames,
Mechanically generated sparks	1.0 %	explosions
	6.5 %	
Arson	17.0 %	primarily
Open flames	6.5 %	open flames
Molten substances	1.0 %	
Lightning strikes	1.0 %	
	25.5 %	

Distribution of fire causes according to Bussenius

Smoldering fires,
open flames,
explosions
6.5 %

68.0 %
Predominantly
smoldering
fires

25.5 %
Primarily open
fire

Availability: a key factor

Companies depend on comprehensive process reliability in their technical systems. IT operators define the requirement for availability according to the highest availability class 4 of the German Federal Office for Security in Information Technology (BSI) is up to 99.999 % which amounts to an annual downtime of approx. 5 minutes.

The IT center as a fire risk

The greater fire load of materials usually found in IT centers shows how high the fire risk is and its effects. Even a smoldering fire caused by a technical defect which forms no noticeable flames and develops very slowly, almost unnoticed, can cause severe damage to technical systems and make further operation impossible.

The main cause of technical defects

The main cause of fires is technical defects in electrical equipment. Such equipment is part of every IT center, present as a highly complex IT infrastructure used in server or control cabinets. Therefore, a comprehensive fire protection plan must be adapted to the individual requirements of each IT center, and all risks related to the materials found there must be included.

WHEN FIRE STRIKES: THE POWER IS GONE.
DATA, KNOWLEDGE AND CUSTOMERS ARE LOST.
NOT WITH OxyReduct®.

The seriousness of a fire is clear to many IT center operators only once it is already too late. OxyReduct® ensures that things don't get that far.

The possible consequences of a fire in an IT center are shown by the necessity of disconnecting the entire IT infrastructure and HVAC technology from power it occurs. There is no way to meet the requirement for annual downtime of approx. 5 minutes according to the highest availability class (VK) 4 often requested by many IT centre operators. Availability is no longer ensured. An integrated fire protection plan with the active fire prevention system OxyReduct® continuously monitors the airtight integrity of the room and can avoid a power shut off such as required in case of fire.

No power shutoff necessary

To maintain business operations continuously and ensure constant availability of the IT structure, it is necessary to avoid a fire and the associated risk of shutting off the power. Thus, in contrast to other fire safety systems, the use of the OxyReduct® fire prevention system enables a power shut-off to be avoided completely when a fire occurs. It remains possible to enter the rooms despite their reduced oxygen content.

Monitoring the airtight integrity of the room

If installation work or changes in use occur later in IT centers, for example, unsealed openings or breaks in raised floors can go entirely unnoticed. Along the spread of dangerous smoke and fumes from or into the IT center, it is difficult to achieve the 10 minutes containment time required to extinguish the fire successfully (according to the firm VdS Schadenverhütung GmbH), making it impossible to put the fire out with gas in the worst case. Not when OxyReduct® is used! A method patented by WAGNER automatically detects changes in the airtight integrity of the room. This enables problems to be identified and corrected quickly so the room remains protected. The system can also be adapted easily to changes in the use of areas to be protected.
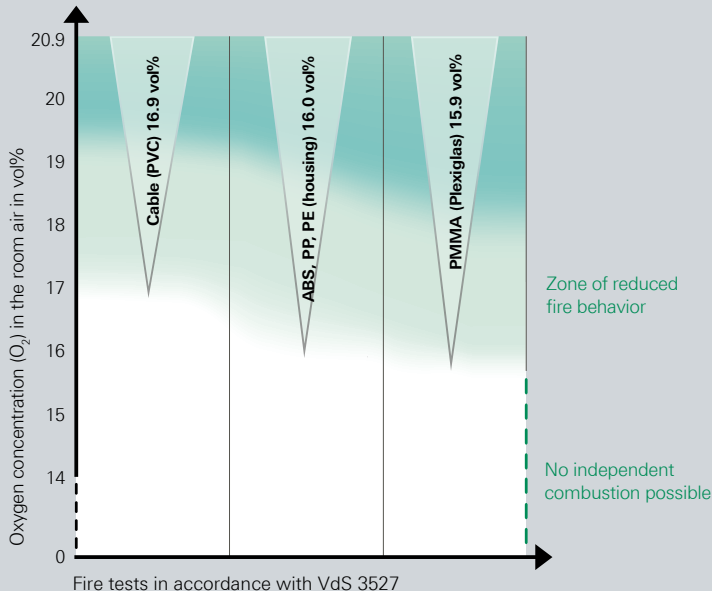

1. Protected area
2. Nitrogen feed line
3. Technical room
4. OxyReduct® Compact
5. Raised floor
6. Alarm device
7. OXY·SENS® oxygen sensor
8. TITANUS®-air sampling smoke detection system

OxyReduct®:
LESS OXYGEN –
MORE PROTECTION.

Every IT center is unique. Its fire protection plan should be as well – adapted to the particular needs.

Flammability limits for materials in IT areas

Oxygen concentration (O_2) in the room air in vol%

- 20.9
- 20
- 19
- 18
- 17
- 16
- 15
- 14
- 0

Cable (PVC) 16.9 vol%

ABS, PP, PE (housing) 16.0 vol%

PMMA (Plexiglas) 15.9 vol%

Zone of reduced fire behavior

No independent combustion possible

Fire tests in accordance with VdS 3527

If fire breaks out in the IT center, the loss of data is inevitable. Our OxyReduct® fire prevention system reduces the available oxygen and keeps it constant at a lower level, eliminating the risk of fire. There are various fire protection concepts for this.

Concept I

Continuous reduction of oxygen levels by OxyReduct® fire prevention system enables the spread of a fire to be actively avoided. To accomplish this, the oxygen concentration is defined based on the materials present in the IT center, reduced to a target concentration in a controlled manner and maintained continuously at this level.

- Greatest fire safety by remaining below flammability limits
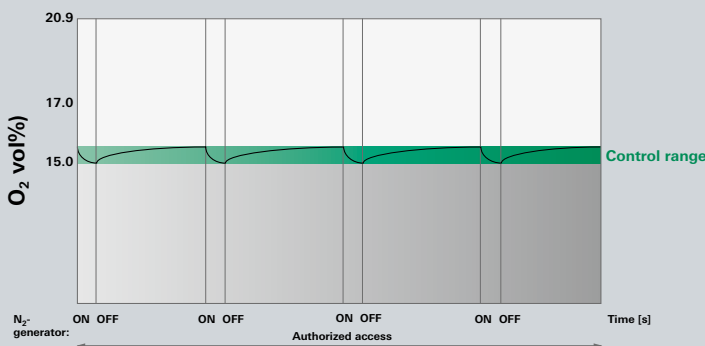- The protected area remains accessible

- Continuous monitoring of the airtight integrity of the room
- Energy required is about 1 % (of the total energy requirement of an IT center)
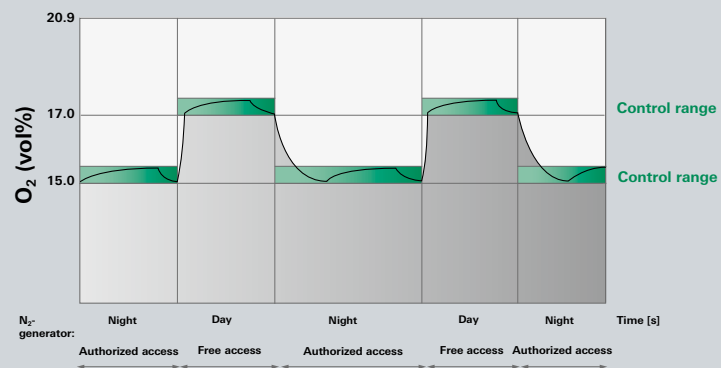
Concept II

OxyReduct® also enables fully automatic adaptation of the oxygen concentration to particular times. This method of fire prevention keeps the oxygen concentration at 17 vol% in the protected areas only while free access to them is required. At night or on weekends, for example, the oxygen is reduced to a lower level.

- Individual adaptation of the protection level
- Fire safety with unsupervised operation of the IT center
- Free accessibility at 17 vol% O_2
- Energy required is about 0.7 to 0.9 % (of the total energy requirement of an IT center)

Control scheme for Concept I

Control scheme for Concept II

CONTINUOUS AVAILABILITY.
THE GREATEST SAFETY.
AND ENVIRONMENTALLY FRIENDLY.

Innovative, green information technology requires new concepts for fire safety. If the environment is considered as well, it's the perfect fire safety solution.

WAGNER has the right solution for every area of application, be it quick reduction of oxygen levels with OxyReduct® or green IT applications. The use of the latest environment friendly green information technology leads to new fire safety requirements best solved with an integrated, multi-level fire safety concept. The active fire prevention system OxyReduct® protects the environment and can avoid the power shutoff which usually occurs with a fire.

possible. When an alarm occurs, a reservoir of nitrogen quickly lowers the oxygen level of the room where it is kept constant by the OxyReduct® fire prevention system. If further smoke is detected, the second stage is triggered in which the oxygen concentration is lowered further and also kept at that level. This suppresses the fire event in a targeted, safe way.

- High energy savings
- Unlimited holding times
- Less use of extinguishing agents
- Monitoring of the airtight integrity of the room
- Free accessibility
- Energy required is about 0.01 % (of the total energy requirement of the IT center)

Concept III

The OxyReduct® fire prevention system reduces the oxygen concentration to 17 vol% in a controlled manner to reduce the susceptibility to combustion of materials found there. This reduces the risk of fire while at the same time also providing the advantage of unrestricted access to the areas to be protected. Highly sensitive TITANUS® air sampling smoke detection systems are used together with OxyReduct® to monitor the minimal risk of fire remaining. If the development of a fire is detected, "fast reduction" is triggered immediately, and in just a few minutes the oxygen concentration is lowered. It can be kept low as long as needed.

- Significantly reduced fire behavior
- Energy saving by low running time
- Free accessibility at 17 vol% O_2
- Energy required is about 0.6 % (of the total energy requirement of an IT center)
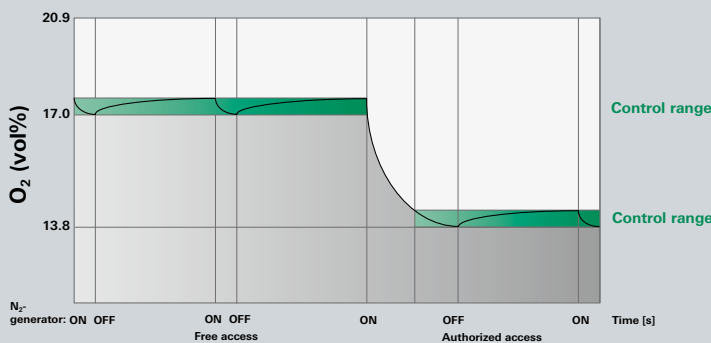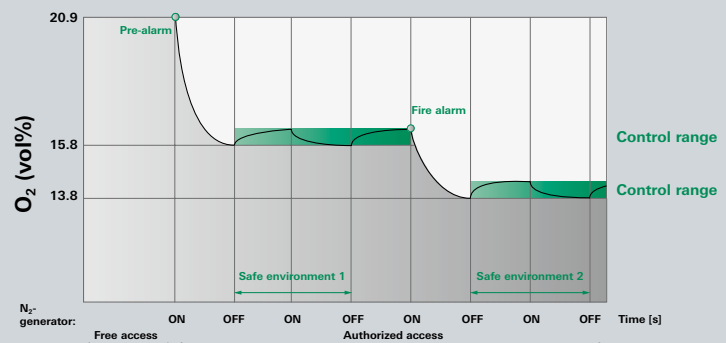
Concept IV

The earliest detection of fire is an important cornerstone of a fire protection plan for green IT or exposed cooling to ensure the desired level of safety. TITANUS® air sampling smoke detection systems provide this in the initial smoldering phase of a fire, identifying the problem as soon as

No power shutoff

The decisive advantage concepts is that, in contrast to conventional fire protection solutions, it is not necessary to shut off the power to the IT infrastructure. This ensures continued operation at protection data while maintaining constant availability.

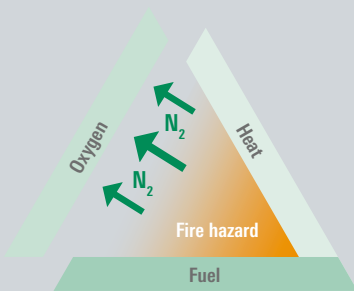### Control scheme for Concept III

Control scheme for Concept IV

OxyReduct®:
LIKE CLIMBING A MOUNTAIN –
BUT MUCH SAFER.

Safety comes first. That's the only way to protect people, equipment and data. Controlled oxygen reduction makes that easy.

At high altitudes, the absolute level of oxygen in the air is known to be somewhat lower. Depending on the altitude, people usually hardly notice this phenomenon. Our fire prevention system, OxyReduct®, applies the same principle to reduce the risk of fire, which means little restriction of access to the protected areas.

Full access

It is decisive to the user that down to 17 vol% there is no restriction of access according to the rules and regulations which apply in Germany, so it is possible to comply with the current safety regulations. Provisions in other countries may differ slightly. Studies and investigations in the field of occupational medicine and by the German employer's liability insurance association have revealed that persons in such an environment suffer no significant deprivation of oxygen. Before entering areas with oxygen levels below 17 vol% a preventive medical check-up for occupational health is required – according to BGI/GUV-I 5162 "Working in oxygen-reduced atmospheres" by the German Statutory Accident Insurance Association from June 2013. This examination only serves as a precautionary measure to prevent people with unknown pre-existing diseases from being exposed to unnecessary stress.

Like being at high altitude

The OxyReduct® fire prevention system is usually used in the field of IT, where the oxygen level is kept between 15 and 17 vol%, depending on the fire load of the materials present to be protected. This level of oxygen is equivalent to being at an altitude between 1,750 and 2,700 meters. Persons not acclimatized to high altitudes can enjoy largely unrestricted capacity for action up to altitudes of about 3500 meters. The International Mountaineering and Climbing Federation (UIAA) has made a number of recommendations on this and further criteria.

Meters above sea level

Matterhorn 4,478 m
4,450
3,850
3,250
Zugspitze Bergstation 2,960 m
2,700
2,250
1,750
1,250

O_2 vol%

12 vol%
13 vol%
14 vol%
15 vol%
16 vol%
17 vol%
18 vol%

Oxygen level compared to sea level

OxyReduct®:
USED AROUND THE WORLD.
A RECOGNIZED SUCCESS.

Every company wants satisfied customers. But this requires more than standard solutions. OxyReduct® means individualized fire protection with a system.

The OxyReduct® fire prevention system protects hundreds of IT centers, warehouses, archives, museums, libraries and many other places around the world in a great variety of application areas. Customers increasingly choose WAGNER and thus not only avoid shutting off the power in the event of a fire but also prevent the fire and water damage which would otherwise occur.

Hundreds put their trust in WAGNER

With more than 350 IT centers around the world using it, OxyReduct® is the most frequent fire prevention technology applying oxygen reduction. The great acceptance of the OxyReduct® fire prevention system shows that it is a fire protection solution with a particularly high safety factor. Its innovative, fully developed technology avoids the fire event. Fires never even get started.

Secure availability

Ever greater numbers of companies put their trust in fire prevention technology from WAGNER.

Noris network AG is one of them. In one of Germany's leading IT centers, it is particularly important to ensure availability. This is why OxyReduct® was chosen for an integrated fire protection plan not dependent on considerations of spatial design and climate control while securing availability at all times to meet all customer requirements. The system is used today in a great range of applications, providing effective protection in IT centers, warehouse areas and archives.

"OxyReduct® has us fully convinced, because we can't tolerate any downtime at all."

Ingo Kraupa, management board chairman at noris network AG

References
(selected)

THE BENEFITS ARE CLEAR.
NO RISK OF FIRE.
THE SAME FOR COSTS.

The benefits of OxyReduct® are convincing all down the line. They make it an innovative fire safety solution which really makes IT centers secure.

Think about the use of an innovative fire protection system at an early

stage, so you never find yourself in a situation which can threaten the

existence of the company. Timely action means more than reacting as

quickly as possible in an emergency. It also means acting much earlier.

Likely you equip your IT center with a modern fire safety system such as

the OxyReduct® fire prevention system from WAGNER. Then you really

acted in time.

The OxyReduct® fire prevention
system with fast reduction.

Convincing and innovative

The OxyReduct® fire prevention system offers convincing protection from many perspectives. There are fewer lines to be laid, and it can be adapted more easily than conventional solutions. Its integrated, patented monitoring system also reveals previously unknown breaches of the airtight integrity in a room, which can occur in the operation of an IT center.
This enables the specifications for construction and energy to be determined directly to identify and correct problems without delay.

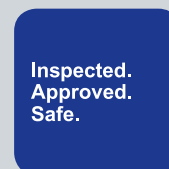### The best fire protection solution

OxyReduct® offers your IT center an optimal fire protection plan adapted to your needs. Our engineers can develop the ideal solution for you based on the actual site conditions. This can also include innovative climate control concepts for "green IT". The OxyReduct® fire prevention system stops a fire from starting. This ensures availability and prevents processes from being disrupted. Shutting off the power to the IT infrastructure and HVAC systems, otherwise unavoidable in case of a fire, is not necessary. Continuous monitoring in combination with TITANUS® systems for earliest fire detection to ensure that even the smallest smoke particles in the air are detected as soon as possible. OxyReduct® is also convincing from a cost perspective. The system for active fire prevention costs no more than a conventional fire safety solution.
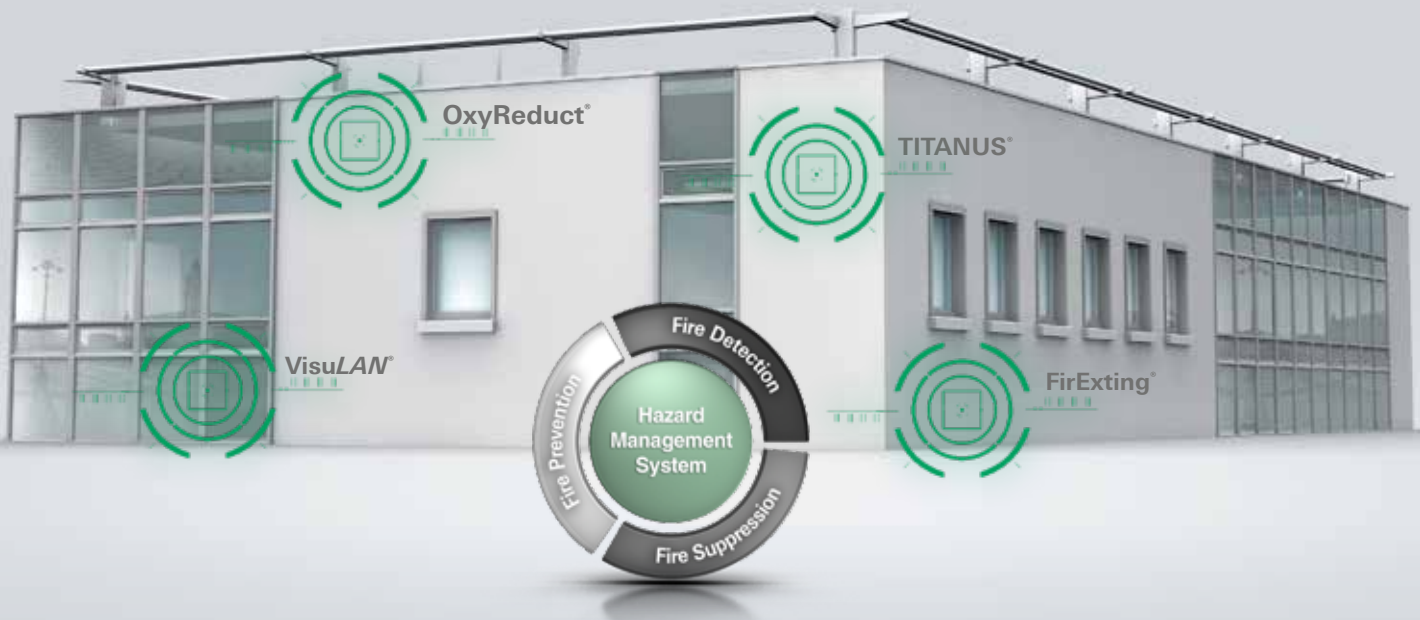
Persuasive benefits

The OxyReduct® fire prevention system is so innovative that these benefits are certain to convince you.

- No power shutoff to the IT infrastructure required in case of fire
- Self-monitoring system technology with continuous checking of function and the airtight integrity of the room
- Continuous, preventive fire protection
- No damage from fire, smoke and extinguishing agents
- Simple adaptation for use
- Little effort to run lines
- VdS-certified

VdS Inspected. Approved. Safe.

DRIVING FORCE.
SYSTEM DESIGNERS.
SOLUTION-ORIENTED.

As leaders in technology, we set standards with our innovative concepts for fire safety.

Interdependent, integrated processes in the IT sector make innovative technologies for fire protection increasingly important. We provide these as a custom package from a single source. It might include TITANUS® for earliest fire detection, FirExting® for fire suppression, OxyReduct® for preventing fires, also available with an option for rapidly lowering oxygen levels, and the Visu*LAN*® hazard management system. The range of expertise available runs from individual with consultation and application-specific development to installation and routine support of the systems.

WAGNER sets standards for fire protection

As leaders in technology, we provide reliable fire protection with our individual solutions so you experience no downtime. Our TITANUS® systems for earliest fire protection use the patented LOGIC·*SENS* system, which is secure against false alarms even in the incipient phase yet is up to 2,000 times more sensitive than conventional smoke detectors. This provides a decisive time advantage for initiating countermeasures, such as triggering a gas extinguishing system to suppress the fire.
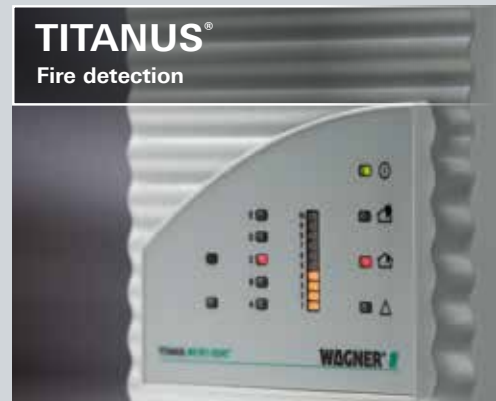
OxyReduct® – As good as it gets

We even go a step further with the innovative fire prevention system OxyReduct®, which provides a level of fire protection never before achieved. Nitrogen is added to reduced the share of oxygen in the room air easily below the flammability limit of fire loads typical for IT areas. Thus a fire can no longer spread. The IT center remains accessible and complies with all the employer's liability insurance association regulations.

Systematic safety

No matter what kind of IT center you operate, our fire protection solutions systematically provide the highest level of safety, because WAGNER is the current standard for fire safety. We are the ones to talk to when you must ensure the availability of your information technology and protect your sensitive, state-of-the-art IT infrastructure from the risks and consequences of a fire. The applications customized by our engineers provide your IT facilities with the greatest possible protection against fire, secure the data stored there and prevent the success of your company from going up in flames.

TITANUS®
Fire detection

OxyReduct®
Fire prevention

FirExting®
Fire suppression

Visu*LAN*®
Hazard management

UNDERSTAND FIRE.
DEVELOP SOLUTIONS.
THIS IS THE WORLD OF WAGNER.

Experience innovative fire protection solutions
live at WAGNER WORLD.

WAGNER

What dangers lurk in your IT center? How can you ensure the

greatest reliability of your IT infrastructure? WAGNER WORLD brings

fire safety to life and makes it easy to understand. Here you can

experience today the technology which sets tomorrow's standards

and get competent answers to your questions.

Experience state-of-the-art technology

Intelligent, forward-looking fire protection is a complicated subject, which is why we opened WAGNER WORLD at our headquarters in Langenhagen, Germany, to clear up unresolved questions and provide answers.

Realistic fire tests

Realistic fire tests are performed in the new laboratories to demonstrate the different combustion behaviours of different materials, for example. In the WAGNER WORLD auditorium, our experts host regular workshops and seminars informing our customers, fire protection officers, insurance experts, fire brigades and public authority representatives of current, general and trade-specific fire protection problems.

Technology put to the test

In addition, you the visitor can put our TITANUS® earliest fire detection system to the test in a permanent exhibition and experience OxyReduct® live in action.

WAGNER – Innovative fire protection since 1976

At WAGNER, we have been developing integrated, personalised fire protection concepts for our customers since 1976. With our innovative solutions, we are now a trend-setter in the market and as a complete service provider we are in a position to deliver you everything from one source: from support in the design, planning and installation of your fire protection solution up to service and support throughout its entire service life, across the world and wherever your need us.

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WAGNER sets standards in fire
protection – with innovative
and comprehensive solutions

Fire detection and alarm systems

**Very early fire detection systems
(TITANUS®)**

Active fire prevention (OxyReduct®)

Fire extinguishing (FirExting®)

Hazard management (Visu*LAN*®)

BETTER SOLUTIONS IN FIRE PROTECTION

WAGNER®