

WAGNERIMPULSE

THE WAGNER GROUP CUSTOMER MAGAZINE 1/2017

Networked worldwide

Digitisation is opening up new
maintenance possibilities

PRACTICE

All shades of
safety

NEW DEVELOPMENT

Fire extinguishing
technology:
Fill up, please!

INTERVIEW WITH MARKUS KOCK

Safe travel
on the rails



Dear Readers and Business Partners,

Nothing is more constant than change – this quote of Heraclitus is quite a good fit for WAGNER these days. One example is our redesigned website in responsive design. Among other things, visitors of www.wagnergroup.com can expect many practical examples of tailor-made fire protection systems and new videos of the innovative OxyReduct® and TITANUS®. Modern navigation brings you straight to the information you are looking for.

Further improvements refer to our solution portfolio, such as our concept for refilling gas extinguishing systems directly on site. This avoids the trouble of removal and transportation of the extinguishing cylinders to the filling facility – and thus saves time and money.

The term Industry 4.0 stands for the expansion of networking people, machines and industrial processes. And this trend does not stop at system technology for fire protection. One example is remote monitoring and diagnosis for fire protection systems – an exciting topic which will certainly become more and more important over the next few years. And WAGNER is in time with the latest trends.

Despite all changes, one thing remains the same: As technology leader in the field of preventive fire protection, our top priority is to minimize the risks of fire from the outset. Here, you can rely on the continuity you are accustomed from WAGNER.

Please enjoy our latest issue!

A handwritten signature in black ink, appearing to read 'Torsten Wagner'. The signature is fluid and cursive, with a large, sweeping flourish at the end.

Torsten Wagner
Managing Director of the WAGNER Group GmbH

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New fire protection projects from all over the world

▼ Fire protection technology from WAGNER installed in the new Rhine-Ruhr Express.



+++ The largest railway project in North Rhine-Westphalia: WAGNER Rail is on the scene, providing fire protection (TITANUS MICRO-SENS®) for the new **Rhine-Ruhr Express**.

+++ All-round protection: WAGNER Bavaria installs an OxyReduct® PSA in a hygiene product warehouse at **Franz Mensch GmbH** in Eresing. +++ Networked worldwide: **BMW Munich** is expanding its VisuLAN® hazard management. The facilities in the US and UK are currently connected. All plants worldwide will follow step-by-step. +++ Fire protection for baked goods: WAGNER Bavaria is using OxyReduct® to protect two **deep-freeze warehouses of Ihle GmbH** in Gersthofen. +++ An OxyReduct® system is planned for a high-bay warehouse of **Linde AG** in Oberschleissheim.

+++ A clean matter: Our Berlin office is building a nitrogen extinguishing system for the data centre of the **Berliner Sanitation Department**. +++ The data centre at **Sachsenmilch** in Leppersdorf is also being protected by a nitrogen extinguishing system. +++ Fire detection is being installed in two data centres at **Hetzner Online** in Falkenstein.

+++ All-round package for mainframe computers: The Hamburg office is installing an OxyReduct® system in the data centre of the **Pinneberg District Administration**. +++ The data centre of **Leuphana University** in Lüneburg is also being protected by an OxyReduct® system.

+++ For automotive production: The Hanover office has received an order for the installation of an air sampling smoke detection system for another hall at **VW** in Emden. +++ The data centre at **KKH Health Insurance** in Hanover is receiving a nitrogen extinguishing system.

+++ All organic: The Mülheim office is building an OxyReduct® system in an organic product warehouse at **Niehoff Davert GmbH**. +++ The fire detection and fire alarm system unit at the **Nikko Hotel** in Düsseldorf is being replaced so that guests can be alerted and evacuated at an early stage in the event of fire. +++ A fire alarm and nitrogen extinguishing system are being installed in the data centre of **PlusServer GmbH** in Düsseldorf. +++ An OxyReduct® system is planned for a high-bay warehouse belonging to **Linde AG** in Marl.

+++ Success in Rhine-Main: The Frankfurt office has gained an order for fire alarm and nitrogen extinguishing systems in the data centres of **e-shelter** in Frankfurt, Munich and Bonn. +++ Data centre provider **Zenium** in Frankfurt is also receiving a nitrogen extinguishing system. +++ Machinery protection: CO₂ extinguishing systems protect the machines at **KAMAX GmbH** in Homberg.

+++ Protection for a cosmetics warehouse: The Stuttgart office has received an order for an OxyReduct® system for **WALA Heilmittel GmbH** in Zell. +++ The office also received five orders to safeguard **KARDEX** shuttle systems. +++ Fire detection with TITANUS® is being installed for hall monitoring at **Daimler** in Rastatt.



◀ **Franz Mensch GmbH** produces hygiene products for the medical sector, among other things.

Ihle GmbH produces baked goods in the Bavarian town of Gersthofen. ▶





Cool in Down Under

Long-time customer and intralogistics general contractor **NewCold** is taking active fire prevention technology to Australia: It is building two warehouses for refrigerated and frozen food from various manufacturers this year in **Melbourne**. Ice cream, dairy products and more are processed for retail distribution in a 436,500m³ deep-freeze warehouse and in a 647,000m³ refrigerated warehouse. An energy-saving OxyReduct[®] system for preventative fire protection via oxygen reduction ensures that the frosty treats arrive at the supermarket shelves on time and in one piece.

One of the biggest wardrobes in the world ...

... is in the **Russian town of Odintsovo**: The company **ECCO ROS** has 188,000m³ of storage space for shoes and accessories. In order to protect it, WAGNER is now equipping the automated high-bay warehouse (built in 2015) with 39 TITANUS[®] air sampling smoke detectors and five OxyReduct[®] low oxygen systems. The individual fire protection concept not only impressed the customer, but the competent safety authority as well. Thanks to OxyReduct[®], the investment costs in construction were significantly reduced in many areas.



◀ **ECCO ROS** is protected by OxyReduct[®] and TITANUS[®].



Impressive technology and service

Searching the internet lead **Coolpak of Neuseeland** to WAGNER: The company was looking for an individual fire protection solution for its 140,000m³ refrigeration and freezer warehouse for fruit, vegetables and dairy products, which is currently un-

der construction. WAGNER's OxyReduct[®] VPSA system was not the only thing that convinced the customer: Our professional communication – despite the huge time difference – helped the new customer in his decision.

Competence for South Africa

Quality – the word gets around: Thanks to a recommendation from a logistics partner in Spain, WAGNER has now received an order in **South Africa**. Beef specialist Karan Beef received the tip to safeguard its 30,000m³ refrigerated warehouse and 41,000m³ deep-freeze storage from fire risks with an oxygen reduction system from WAGNER. TITANUS[®] and OxyReduct[®] VPSA now protect the new building, which is going into commission in April 2017.



Fire protection, pre-installed

WAGNER UK is excited about an order from **pharmaceutical group Astra-Zeneca**: Two OxyReduct[®] VPSA systems will be protecting a new automated high-bay warehouse which is part of a pharmaceutical production system. The highlight: The utility room will be fully pre-installed with the complete fire protection technology and then inserted into the new construction like a prefab house.

Networked worldwide

Digitisation is opening up new possibilities in maintenance and troubleshooting. Thanks to remote monitoring, WAGNER keeps an eye on its OxyReduct® fire prevention systems at all times.

Networking and digitisation offer entirely new ways of further improving the dependability of fire protection systems. That is why, after its initial positive experience, WAGNER has intensified its efforts to make the advantages of intelligent remote monitoring systems usable for its customers.

“Networked fire protection systems which transfer their data in real time form the basis for intelligent monitoring,” explains Lena Niederstuke, Technical Director of System Construction International at WAGNER.

For instance, OxyReduct® fire prevention systems which WAGNER has installed outside of Germany have network connections so that they can be remotely monitored – like the largest deep-freeze storage facility in the USA,

which is run by Preferred Freezer in the north-western town of Richland. “We know how the system is running without having to be there,” says Niederstuke. “In the event of a malfunction, our engineers are able to connect to the system in order to search for faults and even rectify them – or guide a partner on site.”

Remote monitoring

Remote monitoring systems have basically been established in the industry for some time now, but this level of quality and complexity is a new phenomenon which would have been unthinkable without the global megatrend of digitisation.

The option of networking technical systems, components and workpieces relatively easy and cheap in an “Internet of Things” (IoT) and thus in-

tegrate them into continuous information flows, has been accelerating the industry and its customers for years. Both hope to reduce costs, individualise industrial products and speed up product cycles. In this sense, digitisation and networking are equated with Industry 4.0. But the “fourth industrial revolution,” as it is called, does not end at the factory gate. Instead, it affects all phases in a product’s life cycle. After all, only components and systems which receive optimum upkeep will also offer optimum performance.

This ultimately results in intelligent remote monitoring processes which reduce costs and downtime and increase system availability at the same time. This is just as much of a benefit to the manufacturing industry as it is to the companies who equip and operate the buildings.



From single-station systems to worldwide network solutions

Risk management is another example of reasonable networking of individual systems, since the wide variety of technical systems used in today's buildings calls for a modern, comprehensive safety and security concept.

▼ OxyReduct® systems can be monitored remotely.



This is where VisuLAN® X3 comes into play: WAGNER's risk management system collects event information from various safety and information systems, and displays this information within a central user interface. Thanks to its modular design, the system is the ideal solution for any requirement: from single-station systems to internationally network solutions with an

unlimited number of operator stations. The system can be expanded at any time after installation, so it can keep up with the corporate development.

Central system control

The advancement of networked services is expected to transform many industries. The possibilities of making technology more cost-effective, user-friendly and safer are simply overwhelming. "We will as well take the time to refine processes, services and digital tools for the central control and remote monitoring of fire protection systems," says Niederstuke. "In doing so, we orient ourselves on the requirements of our customers, who, beyond standard service, expect maintenance solutions which are flexible, networked and highly available." ■



A keen sense of smell

Patented air sampling smoke detectors ensure highly sensitive and reliable fire detection that is immune to false alarms

Every second counts when a fire breaks out: The faster a fire is detected, the faster action can be taken to prevent more serious damage. After all, fire is an ever-present risk. Material assets, operational processes, people and the environment are always exposed to this threat, which is why appropriate fire protection solutions are so important.

Empirical data show that roughly two thirds of all fires start with smouldering. Conventional point-type smoke detectors are at a disadvantage here: Depending on whether they are optical fire detectors or heat detectors, these smoke detectors will only react to high concentrations of smoke or increased temperatures within the protected area. By that time it is often too late to im-

plement countermeasures. TITANUS® from WAGNER offers a remedy: The air sampling smoke detector detects fires in the pyrolysis phase, thus ensuring that smouldering fires are noticed at an early stage so that the fire can be controlled in good time. "Air sampling smoke detectors make use of the fact that smoke gases begin spreading heavily throughout the room even early on in the incipient fire stage," says Dr. Oliver Linden, Product Manager International at WAGNER.

They can detect fires with up to a thousand times greater sensitivity than point-type smoke detectors. This way, a smouldering cable fire will only cause minor damage and will not spread into a serious fire with serious consequences.

▼ TITANUS® *FUSION* is a good choice for use in production facilities (top), museums (bottom left) and data centres (bottom right).



The detection method

WAGNER makes use of highly sensitive air sampling smoke detectors with an optical detection method to detect fires as early as possible. The structure of a TITANUS® air sampling smoke detection systems is based on a pipe system with air sampling points and a base unit with a detector module. Samples are continuously taken from the ambient air through pipelines and are fed into a sensitive detection unit which examines the samples for the tiniest smoke particles. At the same time, the PIPE-GUARD air flow monitoring constantly checks the pipe system for potential blockages and fractures.

The intelligent LOGIC·SENS signal processing system checks air samples against known fire parameter patterns and false alarm scenarios. Thus LOGIC·SENS ensures maximum immunity to false alarms. If a smoke development pattern is detected, an alarm is triggered immediately. Filters between the pipe system and base unit prevent dust from getting into the detector module. It also ensures consistent detection quality, "so that the same quantity of smoke is always necessary in order to trigger an alarm," explains Dr. Oliver Linden.

Since TITANUS® air sampling smoke detectors take advantage of HPLS light source technology, they are able to cover a wide range of temperatures from -40°C to +60°C. It can also be used in deep freezer applications without

TITANUS® FUSION: Affordable high-end technology

The affordable high-end TITANUS® FUSION air sampling smoke detector is an all-rounder which was designed to monitor equipment such as servers, high-rack storage systems and machinery, as well medium-sized rooms in museums, libraries, EDP facilities, storage areas and production facilities. The system is also suitable for use in difficult-to-access monitoring areas such as tunnels, cable ducts and conveyor belts.

The system covers a temperature range from -30°C to +60°C and can accommodate pipe lengths of up to 2x160m with up to 20 air sampling points apiece, giving you exceptional planning flexibility. Depending on the number of air sampling points, TITANUS® FUSION

meets the requirements of Class A (8), B (12) or C (20) as per DIN EN 54-20. Three main alarm sensitivities, 0.015 % LT/m, 0.10 % LT/m and 0.50 % LT/m, can be selected depending on the requirement. Two detection modules and pipelines can be planned in order to establish dual detector dependency or separate monitoring of two areas with a single detection device. A range of accessories certified as per DIN EN 54-20/ISO 7240-20 complements the modular system.

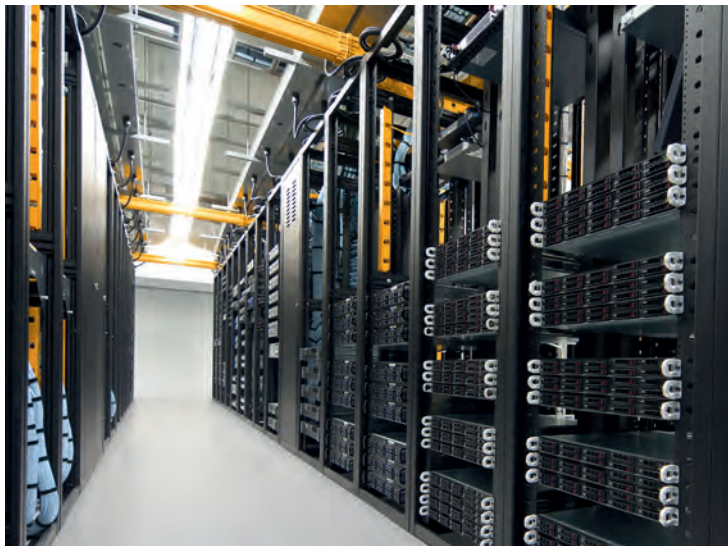


The new TITANUS® FUSION is also available as a Silent version from 23 dB(A).

trouble. Thanks to well developed, patented algorithms for fire pattern recognition and a broad range of accessories, the systems can also be used to monitor extremely dusty areas (e.g.

tunnels and recycling plants) as well as areas with high levels of condensation.

TITANUS® is also available in a Silent version for use in noise-sensitive areas such as hotels, libraries and museums. Installed nearly invisible, the air sampling smoke detection technology can often be found in buildings with strict aesthetic requirements. ■



SEE IT NOW!
Get to know the TITANUS® early smoke detection system:
<https://youtu.be/pENyu8i5v38>



All shades of safety

Cosmetics distributor relies on early fire detection and fire prevention

When solid, maximum-strength reinforced concrete meets trendy cosmetic products, you know you are at the distribution centre of CNL GmbH, the logistics company of Cosnova Beauty, manufacturer of the international cosmetics brands Catrice, Essence and L.O.V. When it comes to fire protection system technology, CNL relies on innovative solutions from WAGNER.

A new 60,000m² logistics facility was built between August 2014 and August

2015 in the Hessian town of Butzbach. The building has 29,900m² of space for the storage, commissioning and distribution of the three cosmetics brands, made up of two hall areas, a two-storey office area with an integrated mezzanine level and a fully automated high-bay warehouse.

Increased protection requirements

The fire protection system technology for the fully automated high-bay warehouse poses a challenge to the operation of the logistics centre. A fire

breaking out and spreading should be prevented in the first place, since items in storage here also include highly flammable substances such as nail polish and nail polish remover.

A solution based on sprinkler technology was out of the question, since the reactive system only triggers after the fire has already developed to a certain stage and released a certain amount of heat. Moreover, CNL cannot afford the business interruption which an extinguishing operation would inevitably entail, since it is under great demand to fulfil its delivery obligations to the worldwide distributors and retailers.

“Sprinkler technology has its place, but some areas have to be protected more sensitively,” says Andreas Erbe, Managing Director of CNL GmbH. That is why Erbe sought alternative solutions to effectively protect the high-bay warehouse from fire risks – and arrived at OxyReduct[®], the active fire prevention system from WAGNER.



◀ **Wiebke Schwanitz and Astrid Sassen of WAGNER in conversation with former CNL Managing Director Andreas Erbe* (from left).**



No fire without oxygen

WAGNER's OxyReduct® fire prevention technology is based on the idea of taking the fire's "breath" away. Releasing nitrogen into the protected area in a controlled manner lowers oxygen concentrations to a level just below the specified ignition threshold for the materials present, and holds them there. The use of nitrogen for oxygen reduction offers major benefits: Nitrogen is not toxic and is the main component in ambient air. Areas in which an oxygen reduction system is used can be entered by authorised personnel.

"OxyReduct® is our life insurance policy," Erbe remarks with confidence. However, certain construction partners, authorities and insurance providers still need to be persuaded of the concept of active fire prevention before it is installed, since not everybody involved has had first-hand experience with OxyReduct® in practice.

Earliest possible fire detection

Employees work during the daytime in the commissioning and loading area, so WAGNER installed an air sampling smoke detection system for the sprin-



▲ Not even a lighter will ignite in the protected area. Andreas Erbe, who has been in charge of international promotion at WAGNER since April 2017, explains: "OxyReduct® is a kind of life insurance for the company."

kler system installed on-site to provide active, preventative protection. Detection is conducted by high-sensitivity, false-alarm-proof TITANUS® air sampling smoke detectors, which continuously takes air samples from the monitored area through air sampling points in a pipe system. The combination of OxyReduct® active fire prevention with earliest possible fire detection with

TITANUS® air sampling smoke detectors provides the distribution centre with optimum protection from fire risks. This practically eliminates the possibility of operations being interrupted by fire – so CNL can dedicate its full attention to logistics. ■

*Andreas Erbe was Managing Director until 2017; his successor is Michael Melanschek, Director Distribution Center CNL GmbH.



CHECK IT OUT NOW!

See how active fire prevention works in practice – at CNL GmbH:
<https://youtu.be/gOGwZhrhal4>



Fish only fries in the pan

Active fire prevention for deep-frozen fish and seafood

It all started in the 1980s with a little market stand in Singapore's Chinatown. The Lee family supplies the residents with fresh fish every day from their small slaughterhouse. The company expanded in the following years and started focusing on selling deep-frozen food products.

The company that resulted, Jurong Cold Store (JCS), founded in 1996, now not only runs one of the first automated warehouses in Singapore, it also has its own shrimp farm in the neighbouring country of Indonesia. This way, the company can reliably supply its customers with products of consistent quality.

In order to meet the constantly rising demand, Jurong Cold Store established an additional automated deep-freeze warehouse in Singapore under management in the second generation. At 45m, it is currently one of the tallest warehouses in the region. It began stocking its first products in October 2016. It will be stocked with up to 15,000 pallets of deep-frozen fish and seafood.

The newly built warehouse in Singapore faced a special challenge in terms of fire protection. With an area of just 719.2km² (nearly the same as Hamburg), space in the island city-state is so tight that a fire in the warehouse would automatically spread to buildings in the immediate vicinity as well. In its internet research on a possible fire protection solution, JCS came upon the principle of active fire prevention and OxyReduct[®] technology from the German company WAGNER. They were certain that active fire prevention was the only effective solution for this newly built warehouse. And so it was that the company came into contact with WAGNER through the consultant on location EDMC and the installer Redlink.

Accessible to authorised personnel

The oxygen content in the 76,000 m³ high-bay warehouse is reduced to a level of 16 % vol. using controlled nitrogen supply. The concentration of remaining oxygen was determined based on the individual ignition thresholds of the goods in storage and their packaging materials. This literally deprives a po-

tential fire of the air it needs to breathe while it is just forming, so that it cannot spread or develop further. At the same time, the warehouse remains accessible to authorised personnel.

The nitrogen needed for the oxygen reduction is generated on-site by OxyReduct[®] VPSA systems. Three OxyReduct[®] VPSA systems were installed to accomplish this, one as a backup.

In addition, the high-bay warehouse is monitored by a special deep-freeze version of TITANUS PRO-SENS[®] air sampling smoke detectors. These enable earliest possible fire detection – and thus immediate initiation of effective countermeasures – yet are immune to false alarms.

The installation of the first OxyReduct[®] system in Jurong's deep-freeze warehouse in Singapore marks WAGNER's breakthrough into the Asian market. No one paid any attention to active fire prevention at the time the warehouse was planned and constructed. For that reason, the local building authority Civil Defence, in charge of



◀ OxyReduct® reduces the oxygen level in the 76,000 m³ high-bay warehouse to 16% vol.



A WAGNER branch office is now being established in the city-state of Singapore. Led by Wolfgang van Pels, the team will be the local contact point for customers in Asia. This means that the German technology leader will not only be planning, engineering and constructing systems, but also providing service and maintenance – all from a single source.

statutory construction provisions, ordinances and building permits, first had to assess the technology's benefits and mode of operation. This is how Jurong Cold Store obtained the necessary special permit to build the new warehouse. In the meantime, the authority is examining the possibility of adopting the principle of active fire prevention in Singapore's fire protection regulations. OxyReduct® could thus become a standard solution in the field of storage and logistics. ■

▼ Jurong Cold Store was founded in Singapore in 1996.





Charged-up, portable – and a fire hazard

Oxygen reduction prevents the fire risks of lithium batteries

Lithium batteries are used in a wide range of applications. In particular, the boom in mobile end devices such as smart phones, tablets and notebooks has led to the rapid spreading of these versatile sources of energy. But the use of lithium batteries also has its risks. Therefore, the requirements for fire protection are commensurately high – especially when it comes to storage.

Lithium batteries have long been part of our everyday life as an energy source for electronic devices. Further applications such as E-bikes, scooters, lawnmowers and power tools have also come into focus over the past few years. Above all, the high-performance batteries are becoming more and more important in the automotive industry, where vehicle manufacturers are working under high pressure on hybrid and electric drive

units. But one lithium battery is not necessarily like the other. Instead, it is a collective term for the wide variety of battery systems (Li-metal, Li-ion, Li-polymer etc.) containing lithium in its pure or compound form as an active material in the battery electrodes. The large number of possible combinations also creates a complex picture of potential safety risks and hazards.

Incidents with lithium batteries

This is also shown by the numerous incidents in connection with lithium batteries from recent years. In September 2016, for instance, a Korean manufacturer had to stop sales of its smart phones only a few weeks after introducing them, and had to recall all models already shipped worldwide. The production of this model had to be stopped entirely only a few weeks after that, due to repeated cases of fires,

which were caused by the lithium-ion battery.

You do not have to look to the Far East to tell that handling lithium batteries can be dangerous: In February 2017, an E-bike battery exploded at a cycle shop in downtown Hanover. Only seconds later, the entire store went up in flames, and the smoke billowed into the parking structure above. The owner and one customer of the bike store were barely able to get to safety in time.

These examples show that the risk of fire when handling lithium batteries should not be underestimated. "Although we basically assume that lithium batteries should be considered comparatively safe with proper handling, these 'miniature power plants' entail specific dangers which represent special challenges for personal safety

Hybrid and electric drives for motor vehicles ►
would be unthinkable without lithium batteries.



▲ With the boom in mobile end devices, the number of lithium batteries is growing each day.



and especially for system-specific fire prevention," explains Dr. Michael Buser, Managing Director of Risk Experts Risiko Engineering GmbH.

“ Although we can basically assume that lithium batteries should be considered comparatively safe when handled properly, these ‘pocket power plants’ do pose specific risks. “

*Dr. Michael Buser,
Managing Director Risk Experts*

Protecting lithium batteries from fires

The risks are ever-present over the entire life cycle of lithium batteries – from manufacturing to disposal. This results in hazardous situations, especially due to faulty handling and improper storage. But manufacturing errors can also lead to internal short circuits. The battery will then be predestined to burst into flames or even explode. The greatest danger is “thermal runaway,” in which large amounts of thermal energy are released. Fires like this are difficult to control with conventional extinguishing

methods. “When defensive fire fighting reaches its limits, protection concepts have to focus on preventing fires from forming or concentrate on effective fire control at an early stage. This is where oxygen reduction technology offers promising approaches towards a solution,” says Buser.

With this in mind, storing lithium batteries looks like a problematic matter indeed. For that reason, the insurance business has specified the risks in detail and defined safety rules accordingly. For example, the mixed storage of medium and high power batteries with other products is not permitted, and systematic fire protection measures are recommended for high-performance batteries.

For these reasons, WAGNER has developed a fire protection solution for storing lithium batteries in partnership with VdS, which can prevent fires from spreading via oxygen reduction in the battery warehouse. In the process, the oxygen concentration is continuously reduced to a fire-suppressive level by the OxyReduct® fire prevention system. Adjacent rooms will not be affected and reigniting is prevented – a unique protection concept which is especially well suited for the storage of lithium batteries. ■

i

A brief profile

Dr. Michael Buser studied chemistry and process technology at the University of Münster, where he also researched lithium batteries, among other things. Today, he is Managing Director at Risk Experts, one of Europe’s leading consultancy for risk advice and damage management. He has many years of experience in industry (environmental protection/safety) as well as in the insurance business (risk engineering/loss control). He has also been working as an instructor and lecturer in many fields of risk management and damage prevention for many years.



Full protection at any time

Two-stage fire protection concept combines time-tested solutions and avoids overdimensioning extinguishing equipment in data centres

The fire protection requirements of modern data centres are demanding: Redundant, energy-efficient systems which are sensitive, yet immune to false alarms. Conventional systems with gas extinguishing technology are frequently overdimensioned and work reactively, since the fire (and thus damage!) must develop to a certain stage in order to trigger automatic extinguishing. This is where WAGNER is setting out with a new fire protection concept.

The innovative new concept developed specifically for data centres is based on the principle of immediately introducing a protective atmosphere into the protected area when the tiniest trace of smoke is detected. The cause of the fire can then be determined and eliminated – without interrupting operation.

The comprehensive fire protection solution for data centres is thus made up of a maximum-sensitivity fire detection system which uses air sampling smoke detectors to continuously and actively check air samples for smoke aerosols. A nitrogen extinguishing system is then activated, which can be operated at two different safety levels based on the alarm from the detector (which is also staged): at a fire-suppressive oxygen concentration level, and at an extinguishing residual oxygen concentration level below the ignition threshold.

The cherry on top

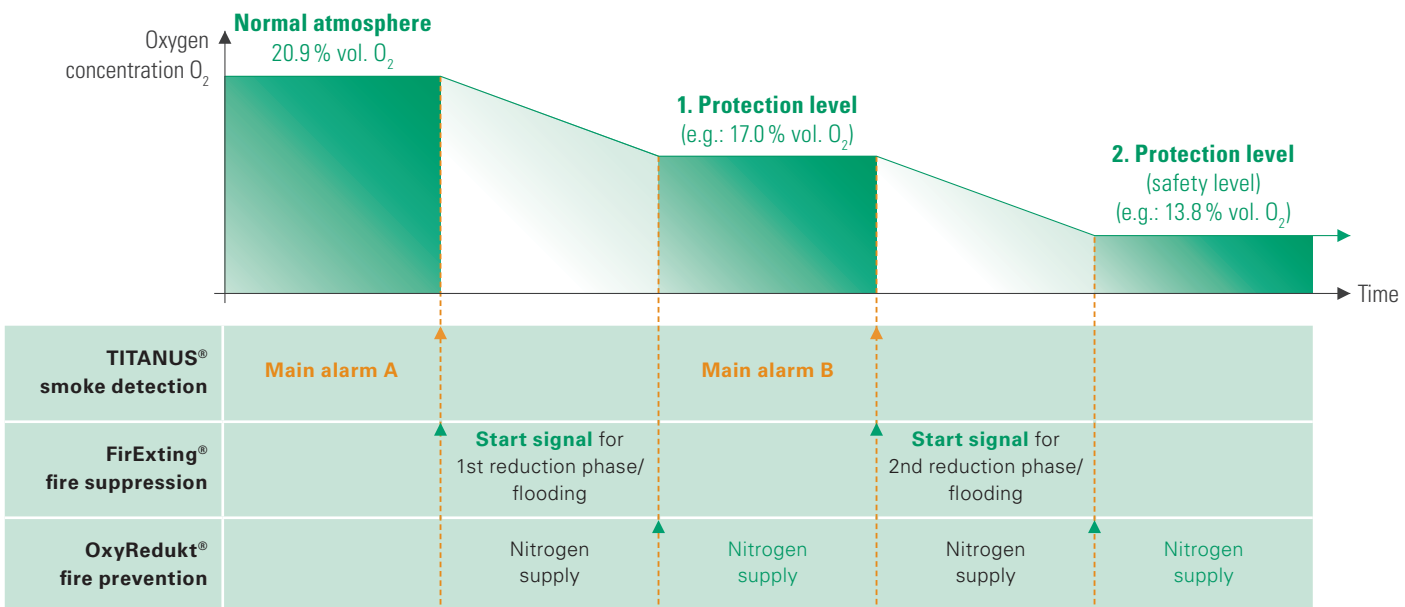
The system needs less extinguishing agent and the target concentration is reached much more quickly thanks to the staged reduction achieved by the extinguishing agent being fed in.

In conjunction with an oxygen reduction system, the relevant safety level can be maintained, such as 17 % vol. for level one and 13.8 % vol. for level two. This eliminates the need for additional extinguishing containers and simultaneously provides virtually limitless protection thanks to an unrestricted extinguishing holding time. The oxygen reduction system obtains the nitrogen it needs from the ambient air, thus saving energy. The two-stage fire protection concept for data centres thus combines cost-effective operation with unlimited active fire protection.

Two-stage fire detection and oxygen reduction

In the event of a smouldering cable fire, the system ensures that highly sensitive air sampling smoke detector detects the fire at an early stage. The

HOW IT ALL WORKS TOGETHER





▲ **Discussing the new fire protection concept:** Development engineers Dr. Rüdiger Noack (left), Anselm Eberlein (centre) and Dr. Alexander Günther (right) with laboratory assistants Rolf Wendt (2nd from left) and project manager Jörg-Klaus Friedrich (2nd from right).

oxygen level is rapidly and directly reduced to 17 % vol., preventing the fire from developing quickly. After the employees eliminate the smouldering fire in an accessible room atmosphere, the fire risk is easily kept under control.

However, should a larger, more serious fire break out, the air sampling smoke detection system's second alarm will activate and the system will switch over to the second safety level of 13.8 % vol. This effectively suppresses the fire, because oxygen concentrations will now be below the ignition threshold of typical IT materials. The head start is also of great benefit in this case, since the system will immediately react in the pre-warning period. This limits the extent of damage from the outset and fights the fire in appropriate doses. Another advantage: it eliminates the need for the level of extinguishing gas concentration which is used in conventional gas extinguishing systems and which poses a risk to personal safety.

Economical, flexible and reliable

The amount of extinguishing agent supplied is up to 37 % lower than that with conventional systems. Pressure relief areas can be reduced by up to 80 %.

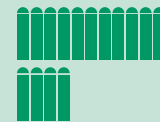
◀ **The staged fire protection concept gives you a head start by initially triggering in the pre-warning period, and is much more cost-effective than conventional extinguishing methods.**

High energy efficiency is another benefit: In the overall analysis of the energy a data centre consumes, the energy costs for the two-stage fire protection solution are just a drop in the ocean. For instance, air conditioning alone usually uses up about 22 % of the total energy consumption.

All components of the new fire protection solution – from the detection and gas extinguishing to the oxygen reduction system – have proven themselves in practice for many years and are tested and certified by VdS. In the aftermath of an extinguishing operation, the oxygen reduction system can theoretically maintain the protection level in the data centre for an unlimited amount of time. The data centre thus remains reliably protected from a further fire breakout – even if the extinguishing containers are empty. This way, the system reliably bridges the time it takes for the extinguishing system to be refilled. ■

Benefits of the new fire protection solution

Personnel protection and availability factor



The extinguishing agent supply is reduced by up to 37 %.



Pressure relief areas can be reduced by up to 80 %.



Allows free accessibility to personnel.

Safety factor

The OxyReduct® system checks the protected area for leaks and detects structural changes and air conditioning changes.



Cost-effectiveness factor



Attractive investment costs



Low operational costs



Minimal energy consumption

Fill up, please!

New concepts enable refilling of gas extinguishing systems directly on site

Nitrogen extinguishing systems effectively suppress fires and prevent fires from spreading further, thus precluding ensuing damage scenarios. Once extinguishing agent containers have been triggered, they have to be refilled for their next use. To do this, they normally have to be removed, loaded and shipped off to a filling station for refilling.

This can be very time-consuming and expensive – especially if the extinguishing system is in an area which is difficult to access, such as in an underground safety area, a remote facility or a building with access control. Fire protection experts WAGNER thought one step further and developed a concept for refilling nitrogen systems on site –

without having to remove anything or transport hazardous goods. A concept that pays off, especially if there is a large number of extinguishing containers to be refilled.

Cost and performance-optimised configuration

WAGNER's innovative refilling concept is available for new systems and can also be retrofitted to existing systems. A new nitrogen generator produces the nitrogen needed to refill the extinguishing containers from the ambient air directly on site. The nitrogen generated to refill the extinguishing agent containers is compressed at 300 bar using a special high-pressure compressor. This way, the extinguishing system can be refilled on site immediately

after being triggered, so there is no need for time-consuming removal and transport of the extinguishing contain-

” The refilling system can be cost and performance optimised and configured according to individual customer requirements. “

Dirk Hoppe, Business Development Manager at WAGNER



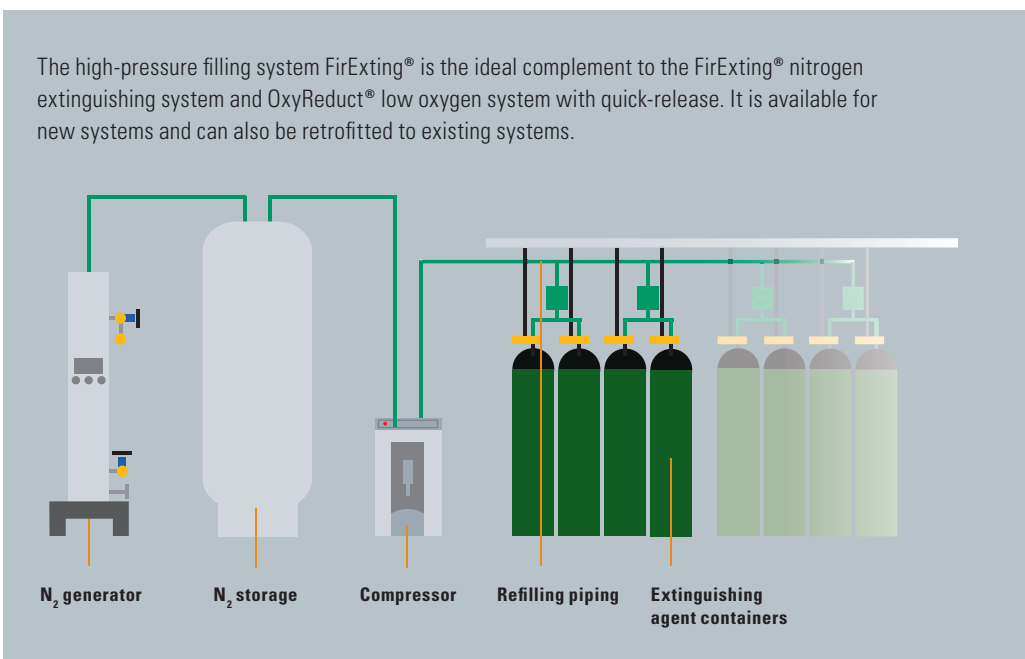
ers. "The refilling system is cost and performance-optimised and configured according to customer's individual requirements," remarks Dirk Hoppe, Business Development Manager at WAGNER. The new concept of refilling on-site offers several advantages, as Hoppe explains: "The nitrogen generator can keep the oxygen concentration

in the protected area at a reduced level during refilling. This is done by feeding additional nitrogen into the protected area, preventing reignition. This oxygen concentration can be maintained as long as it is needed, which is not possible with conventional gas extinguishing systems. This ensures continuous active fire protection.

Time-consuming refilling is a thing of the past

This can constitute immense benefits for operators of FirExting® nitrogen gas extinguishing systems: The elaborate removal of emptied extinguishing containers is no longer necessary. "This is especially interesting for systems which are frequently triggered, where 100 % self-sufficiency is required," says Hoppe. "This investment can pay off quickly, depending on the size of the system and the number of triggerings," Hoppe continues. ■

▼ WAGNER testing lab director Jörg-Klaus Friedrich (left) and Dirk Hoppe of Business Development with the compressor for the new refilling system.



◀ Refilling nitrogen tanks is an especially good idea if the extinguishing system is in an area which is difficult to access.

Outstanding performance

noris network AG promises its customers maximum safety – also in terms of fire prevention



3,200 m² of high density IT facilities in an area of 4.400 m², 2,100 server racks and space for over 100,000 servers: This is the first stage in the construction of the new high-performance data centre of noris network AG in Munich. Another 4,800 m² of IT space on a surface of 6,500 m² will be added in the second stage of construction.

The technology of the award-winning Nuremberg South data centre (which went into operation in 2012) was refined further for the new € 33 million Munich East data centre. With its motto of “exceptional performance,” noris is setting new standards in all important factors: maximum safety, maximum availability and scalability and heretofore unachieved energy efficiency. The project has already been deservedly awarded

the German Data Centre Prize in 2016 in the category “newly built energy and resource-efficient data centres.”

Sophisticated fire protection concept

Like the data centre in Nuremberg, noris network also relies on fire protection from WAGNER in its new facility in Munich East. 16 TITANUS *TOP-SENS*[®] air sampling smoke detectors handle the task of monitoring the first protected area, which has a size of 1,748 m². When the main alarm of the first detection stage is triggered, the Kyoto wheel of the indirect Free Cooling is shut off and the data centre is cooled by the DX cooling system. The oxygen level in the room is reduced from 20.9 % vol. to 16.0 % vol. by feeding in nitrogen from a reservoir of 96 nitrogen tanks in approx. four minutes at safety stage one. At the same time, the OxyReduct[®] nitrogen generation system with PSA technology is activated and keeps the oxygen concentration at a

constant 16% vol. This fire-suppressing protective atmosphere prevents a forming fire (such as a smouldering cable) from developing or spreading. If the early detection system’s second detection stage detects more smoke, another 90 nitrogen tanks reduce the oxygen concentration to 12.5 % vol., thus lowering it to the second safety stage, which is then kept constant as well. The hold time can theoretically go on indefinitely, since the OxyReduct[®] oxygen reduction system gets the nitrogen it needs from the ambient air on site.

The configuration of the OxyReduct[®] system required is based on the lowest target concentration of 12.5 % vol. of residual oxygen, which must be reached and maintained in extreme cases. This was determined based on the prevalent materials in the data centre and their individual ignition thresholds. If the space is monitored accordingly, the system can be operated at a level of 14.6 % vol. residual oxygen in accordance with VdS guidelines for oxygen reduction systems.



▼ While the Kyoto wheels in the Nuremberg South data centre were installed horizontally, the six metre wide Kyoto wheels in Munich East are installed vertically. This allows more IT area to be used within the same building width.



noris network AG of Nuremberg offers companies tailor-made IT solutions in the fields of IT outsourcing, cloud services and network & security. The technological basis of these services is a high-performance IT infrastructure with multiple high-security data centres.

Founded in 1993, noris is one of Germany's pioneers in the field of modern IT services and currently supports big-name companies like adidas AG, Consorsbank, Flughafen Nürnberg GmbH and Puma SE.



Added benefits

Once the fire protection system has been activated in the event of a fire, there is no need to cut the power of the IT area, since the protected area is constantly kept in a fire-suppressive state thanks to the continuously reduced concentration of oxygen. The data centre can thus continue to operate. The oxygen concentration is also

kept to 14.6% vol. while the nitrogen tanks are being refilled, so as to ensure maximum fire protection during this time as well. ■



SEE IT NOW!

Get to know the fire protection solution for noris network in practice:
<https://youtu.be/58pLzkqC-Kk>

Safe travel on the rails

WAGNER is bundling its rail experience in a newly founded subsidiary



i

A brief profile

48-year-old engineering graduate Markus Kock studied electrical engineering and has been working for WAGNER Group GmbH since 1999 – and has been Director of System Construction in Germany, Austria and Switzerland since 2008. In 2013, he joined the management of WAGNER Bayern GmbH. Since December 1, 2016, he has managed the newly founded WAGNER Rail GmbH alongside Dipl.-Ing. Werner Wagner.

With the establishment of WAGNER Rail GmbH on December 1, 2016, WAGNER Group bundled its fire protection expertise for rail vehicles into a new 100% subsidiary. Markus Kock, who manages WAGNER Rail GmbH alongside Werner Wagner, explains the backgrounds in this interview and points out goals and opportunities.

Mr. Kock, WAGNER stands for fire protection solutions to protect buildings and equipment. How did the company get into the rail vehicle market?

WAGNER entered the field of fire protection for rail vehicles in 1998 with the Shanghai Transrapid project – a business which was largely carried forward by Siemens. Fire protection solutions



from WAGNER are now in use all over the world: The Moscow Aeroexpress, the UK Thameslink, the Metro Klang Valley in Kuala Lumpur and the Munich underground are just a few examples.

How was the rail business organised before this, and which aspects led to the decision to establish a new subsidiary?

WAGNER Bayern GmbH and WAGNER Schweiz AG both operated quite successfully in the railway business in the past. Both subsidiaries have handled railway orders independently. Demand for fire protection solutions for rail vehicles has risen steadily during this time. Last but not least, the enactment of many national and international standards and guidelines has made fire protection systems in rail vehicles part of the state of the art. The clear

separation of the railway and building technology business divisions initially led to the formation of an independent railway department within WAGNER Bayern GmbH – and consequently to this division being outsourced to form WAGNER Rail GmbH.

What goals do you associate with the establishment of WAGNER Rail GmbH?

Our rail business is highly focused on the international market, and we seek to expand these activities further. The establishment of this new company is intended to make it clear to our customers already through our name we focus on rail transport. This will make it even easier for us to go to different countries and support projects on location. We also want to focus more on our competencies: with 40 years of ex-

perience in safety technology, we also offer tailor-made fire protection solutions specifically for rail vehicles, from planning and engineering to installation and maintenance.

And what will the establishment of WAGNER Rail GmbH change for the customers?

It will not only mean the change of the company's name, but quotes will be prepared and orders will be processed centrally by WAGNER Rail GmbH. The general terms of business, sales and delivery will remain unchanged until further notice, as will the personal contacts. This applies especially to the experienced colleagues of WAGNER Schweiz AG, who will still be involved in the business through their consulting functions and above all will still be in charge of the water mist technology. ►

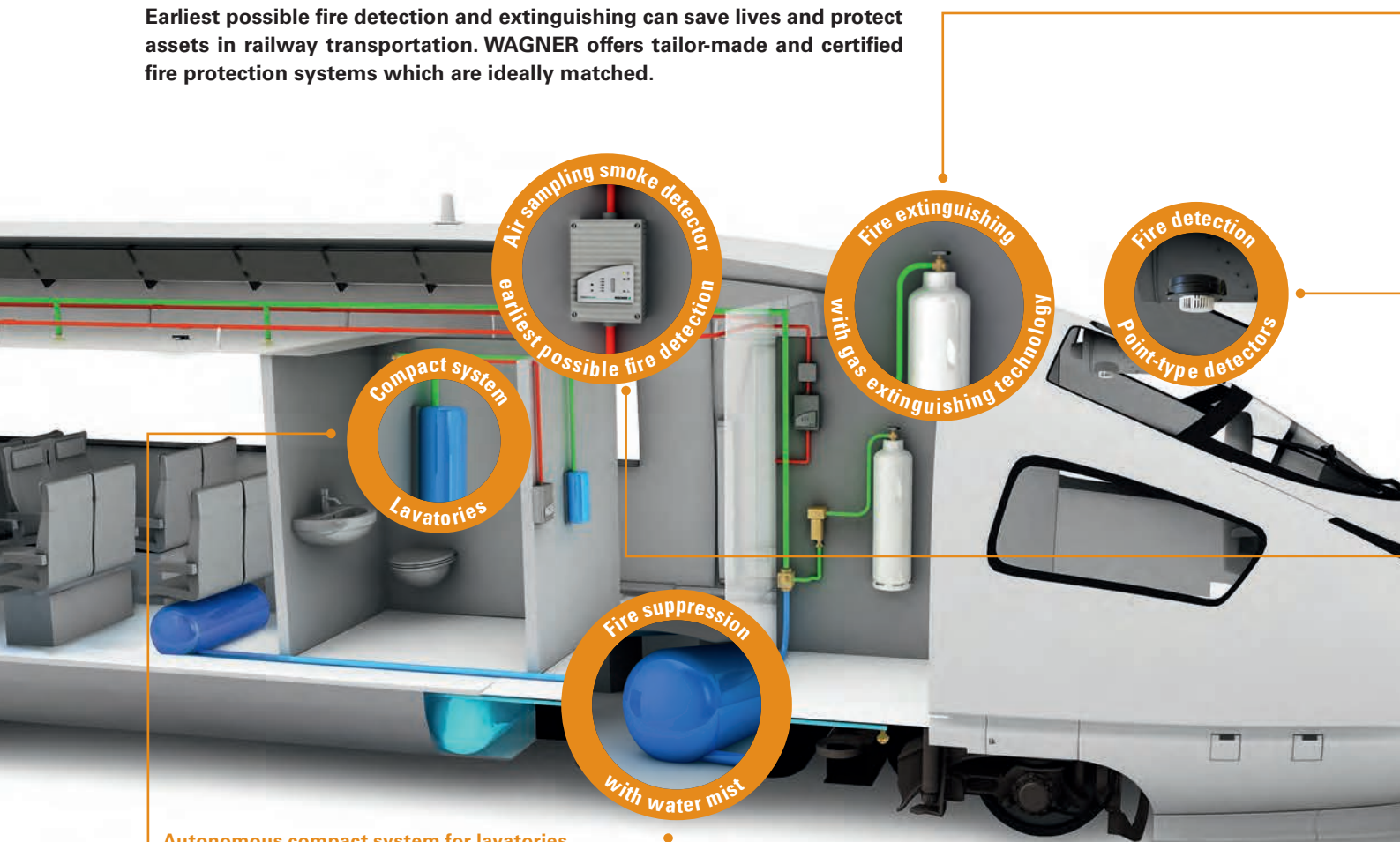
► Continued from page 23

We are also focusing on continuity: Our customers can rely on the fact that WAGNER Rail GmbH is always the right partner when it comes to developing and implementing tailor-made fire protection solutions for rail vehicles.

Thank you for your time,
Mr. Kock.

Individual fire protection for rail vehicles

Earliest possible fire detection and extinguishing can save lives and protect assets in railway transportation. WAGNER offers tailor-made and certified fire protection systems which are ideally matched.



Autonomous compact system for lavatories

Specifically designed for passenger areas with little space and equipped with a separate extinguishing container. The compact system will be triggered as soon as smoke is detected in the lavatory – the train will retain its remaining supply of extinguishing agents.

Fire suppression with water mist

Water mist fire suppression systems are used in passenger areas. WAGNER's unique technology creates fine droplets of water mist from nozzles, even at low hydraulic pressure. The water tank is installed in a space-saving manner (such as underfloor areas).

▼ The team of the newly founded WAGNER Rail GmbH in Munich, Germany.



Fire suppression with gas extinguishing technology

Gas extinguishing systems can also be used in separate areas such as control and electrical cabinets in underfloor areas, as well as in locomotives. In combination with earliest possible fire detection technology, these modular systems will extinguish initial fires quickly, reliably and without leaving any residue – without jeopardising the electrical systems thanks to natural extinguishing gases (such as nitrogen).

Fire detection with point-type detectors

Addressable optical point-type detectors can be used as an alternative detection system in the driver's cab and passenger area in combination with air sampling smoke detectors.

Air sampling smoke detectors/ very early fire detection

The WAGNER fire detection system picks up even the tiniest amounts of smoke particles before the smoke even appears. Air sampling smoke detectors continually take samples of the air so as to detect fires as early as possible.

More information on WAGNER Rail:



▲ Railway fire protection experts WAGNER Rail are also available online: <http://www.wagner-rail.com>



Online ...

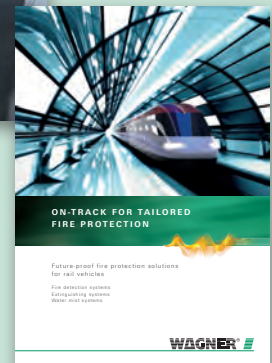


Videos about fire protection in railway vehicles:
<http://www.wagner-rail.com/downloads/video.html>



◀ The customer newsletter WAGNER Rail News informs you of current developments in fire protection for railway transportation.

▶ A brochure provides information on sustainable fire protection solutions for railway vehicles.



... and on paper.





◀ Markus Block's presentation in Security on Tour was met with a warm response.

WAGNER on the road – Security on Tour 2017

Under the title “Security on Tour 2017 – Germany’s first multi-brand security road show,” organiser EUCAMP and trade journal GIT Sicherheit + Management as media partner invited visitors to a one-day presentation programme in five cities in Germany and Switzerland.

The series of events aimed at presenting trends in the security industry as comprehensively but as well as compactly as possible. The presentations were accompanied by a multi-industry exhibition of the latest technologies from the security sec-

tor, as well as many opportunities to exchange views with experts on location.

Fire protection expert WAGNER did not pass up this chance to make contact and presented itself and its latest fire protection solutions to a wide audience from the security industry as one of 18 exhibitors in Cologne, Egerkingen (Switzerland), Munich, Frankfurt am Main and Hamburg. ■

MORE INFORMATION:
www.securityontour.com

Preview

Issue 2/2017

Fire protection for the Elbe Philharmonic Hall

The Elbe Philharmonic Hall is the new landmark in the Hanseatic city of Hamburg and has become the most popular concert hall in the world, where visitors from all over the world come to admire the breathtaking architecture. TITANUS® air sampling smoke detectors from WAGNER ensure earliest possible fire detection in the heart of the structure, concert halls and foyer.

WAGNER BC600 fire detection control panel

Everything around fire protection from a single source: WAGNER is offering its first proprietary fire detection and alarm system: the BC600-Series. The BC600 control panel provides the full range of functions of a high-end fire panel – i.e. the protection of human lives, assets and processes – at an attractive price. Customers will benefit from a new, sustainable product with highly advanced technology.

Patented room leak-tightness check

Rooms in which oxygen reduction or gas extinguishing systems are installed must be checked to ensure they are leak-tight – after all, fire protection systems only provide reliable protection if a fire-suppressing or extinguishing concentration can be maintained. For that reason, it is necessary to identify any leakage points in a protected area. In order to achieve even more precise results, WAGNER has optimised its room tightness checking procedure – and applied to have it patented.



WAGNER engineer
Lena Niederstuke:

On site in Singapore

Last year, I spent a few business weeks in far-off Singapore to wrap up the configuration and approval of the OxyReduct® system at Jurong Cold Store (see page 12). And I will keep my stay in the city-state in my memory for a long time.

At temperatures which never fell below 30°C and air humidity in excess of 80%, anyone with air-conditioning could consider themselves lucky. Less fortunate under these climate conditions was the fact that the lift had not been finished yet and the construction site was on the 5th floor. And I was not the only one who had to endure going up and down the stairs several times a day; tools and work material also had to be hauled up by hand. Blessing in disguise constituted the fact that the Indian construction workers were accustomed to such temperatures and not only carried the material, they also brought me a fan. As a German, my discomfort must have been written onto my face.

The final acceptance of the fire prevention system was also similarly uncomplicated and took place with virtually pragmatic simplicity. Since Singapore does not have guidelines and ordinances yet which cover this field, representatives of the competent building authority had to be convinced of the functionality of the OxyReduct® system by other means.

Without further ado, we made use of a principle which some Impulse readers may be familiar with from the OxyReduct® section of WAGNER's trade fair stands: Armed with a candle instead of a lighter, the building authority employees entered the deep-freeze high-bay warehouse and witnessed how the ignition source was extinguished right away. An additional handheld oxygen sensor provided the unbiased proof: The oxygen level is reduced, so nothing in Jurong Cold Store's warehouse can burn any longer. Singapore's first fire prevention system can now go into operation. ■

LEGAL NOTICE

Published by:
WAGNER Group GmbH
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Image sources:
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Art. no. 68-30-3416, revised 05/17

Experience fire protection solutions live from WAGNER!

WAGNER World – hands-on fire protection technology!

26.04.2017 – 27.04.2017

VdS Conference 2017 in Warsaw



04.06.2017 – 07.06.2017

NFPA 2017 in Boston



13.06.2017 – 15.06.2017

GCCE 2017 in Chicago



See fire protection at first hand

Would you like to convince yourself how effective our innovative fire protection solutions are? Come to our experience and exhibit world in Langenhagen! At WAGNER World, we present you our fire protection solutions in action.



Further event dates and direct contact to your partners at WAGNER can be found at www.wagnergroup.com



BETTER SOLUTIONS IN FIRE PROTECTION

WAGNER®