

Invented for life



**BOSCH**

# Tűzjelző rendszerek

## Intelligens tűzvédelem

AVENAR 2000 és 8000 központok



AVENAR detektor 4000 tűzérzékelő



500-as sorozatú füstérzékelők



AVIOTEC 8000i IR  
biztonsági kamera

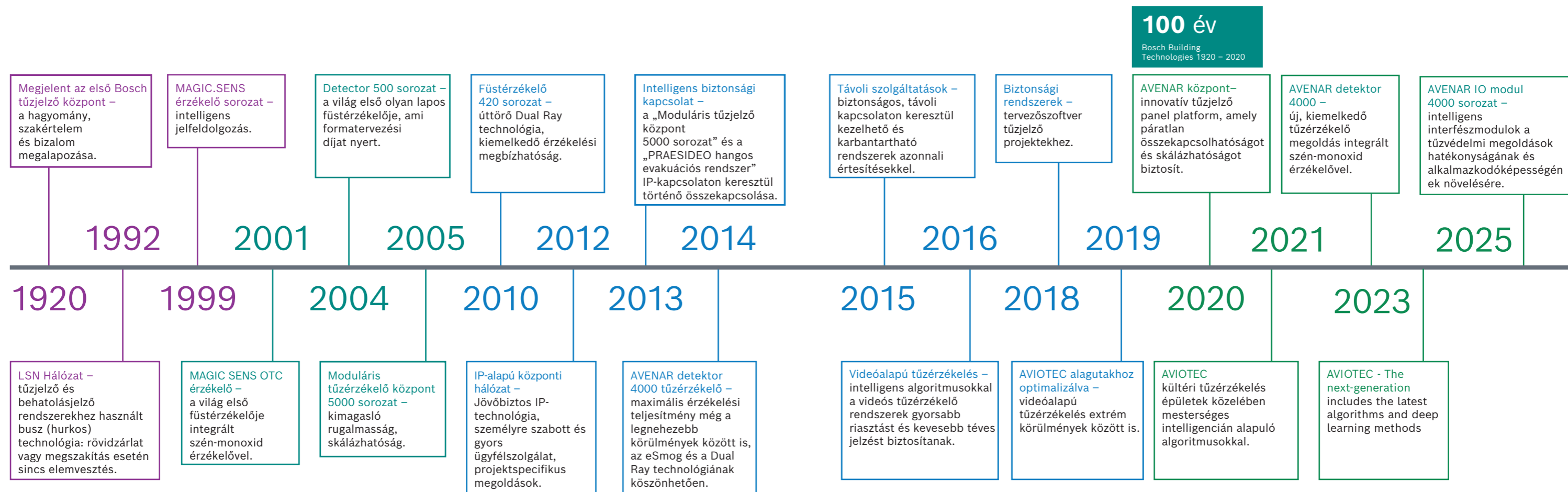


NEXOSPACE  
tűzvédelmi rendszer



## Az emberek biztonsága az elsődleges prioritásunk

A Bosch mérnököi –  
Innovatív erő a tűzérzékelés terén  
Több mint 100 éve a technológia szolgálatában



A Bosch számára a biztonság elsődleges szempont. Minden termékünket úgy tervezzük, hogy a felhasználók ne csak biztonságban érezzék magukat, hanem baj esetén eszközeink valóban gyorsan és hatékonyan tudjanak jelezni. A tűzjelző rendszer villámgyors működése kulcsfontosságú ahhoz, hogy időben érkezzen a segítség. Termékeink egymással minden esetben jól kombinálhatók, így teljes körű megoldást is tudunk biztosítani – akár egyetlen forrásból.

### Tudta, hogy...

A Bosch volt az első vállalat a világon, amely szén-monoxid érzékelőt épített a tűzjelzőibe?



### A tűz megfékezése

A Bosch tűzjelző rendszerek tervezésében több mint 100 éves tapasztalattal rendelkezünk, így különféle alkalmazásokhoz megbízható megoldásokat kínálunk. Automata érzékelőink között megtalálhatók a több kritérium szerint érzékelő és szinte láthatatlan, süllyesztett modellek is. Ezeket rugalmas, felhasználóbarát központok – például az AVENAR központ sorozat – egészítik ki, amelyek a tűzvédelmi riasztásokat és egyéb eseményekhez kapcsolódó üzeneteket koordinálják. Egyedi panelkivitelünk lehetővé teszi az Ön igényeire számára szabott védelmet. A rendszer részei a kézi jelzésadók, hangjelzők, villogók, interfészmodulok, speciális érzékelők és a videóalapú tűzérzékelő AVIOTEC is – így lesz teljes az összkép.

### Mintha mindig ott lenne

Az előrejelző karbantartás a költséges téves riasztások elkerülésének kulcsa: így a tűzjelzés idejében és megbízhatóan működik. A távoli szolgáltatások révén a szervizes kollégák hatékonyabban dolgozhatnak, hiszen távoli diagnosztikával gyorsabban találnak hibát – így időt, pénzt és akár életet is mentenek. iOS és Android alkalmazásaink biztonságos felhőalapú rendszerben működnek, ami tűzriasztás vagy hiba esetén valódi push üzenettel és azonnali értesítéssel segít.

Egy rendszer, amely olyan egyedi, mint Ön

## Megbízhatóság, rugalmasság és minőségi szolgáltatások

A Bosch technológiai fókuszú vállalatként, napjaink digitalizált, online világában innovatív, fenntartható és jövőálló, ugyanakkor teljes körű megoldásokat kínál. Szakértelmét, élvonalbeli technológiáit és szoros partneri kapcsolatait ötvözve folyamatosan új lehetőségeket teremt, miközben biztonságban tartja vagyontárgyait. A Bosch tűzjelző rendszerek zökkenőmentesen illeszkednek a már meglévő rendszerekhez, és bármilyen helyszínre megbízható tűzérzékelést, valamint fejlett hangos riasztó megoldásokat nyújtanak. Minden termék a legújabb fejlesztéseket tartalmazza, többek között többérzékelős technológiát, mesterséges intelligenciát, mélytanulást és az IoT (Internet of Things) lehetőségeit, amelyeket a Bosch korszerű érzékelői, riasztói és rendszerlemei testesítenek meg.












**Megbízhatóság** – A Bosch olyan megoldásokat kínál, amelyek jelentős előnyökkel szolgálnak vállalkozása számára. Fő fókuszunk az emberek és értékek védelme, ezért rendszereinket úgy terveztük, hogy a legnehezebb helyzetekben is biztosítsák az üzletmenet folytonosságát. Ezt innovatív megoldásokkal érjük el, melyek a mesterséges intelligenciát és az okos érzékelőtechnológiát ötvözik, így megbízható és fejlett tűzérzékelő és megelőző rendszereket kínálunk, amelyek pontosan az Ön igényeire szabhatók.

**Rugalmasság** – Biztosítjuk, hogy befektetése védett legyen olyan megoldásokkal, amelyek jövőbiztosak és alkalmazkodnak a technológiai fejlődéshez. Tűzvédelmi paneljeink teljesen modulárisak, így zökkenőmentesen integrálhatók a legmodernebb technológiákkal. A „visszafelé és felfelé kompatibilitásnak” köszönhetően könnyedén fejlesztheti meglévő rendszereit, miközben azok értékét megőrzi, biztosítva a hosszú távú megbízhatóságot és teljesítményt.

**Értékes szolgáltatások** – Szolgáltatásaink célja a hatékonyság javítása és a költségek csökkentése, miközben az Ön igényeire szabott további előnyöket biztosítunk. Átfogó képzést és folyamatos támogatást kínálunk a rendszer zökkenőmentes működésének biztosítása érdekében. Intuitív rendszertervező eszközeinkkel és fejlett távoli felügyeleti képességeinkkel tűzbiztonsági rendszereinek kezelése még soha nem volt ilyen egyszerű és hatékony.

### Tartalomjegyzék

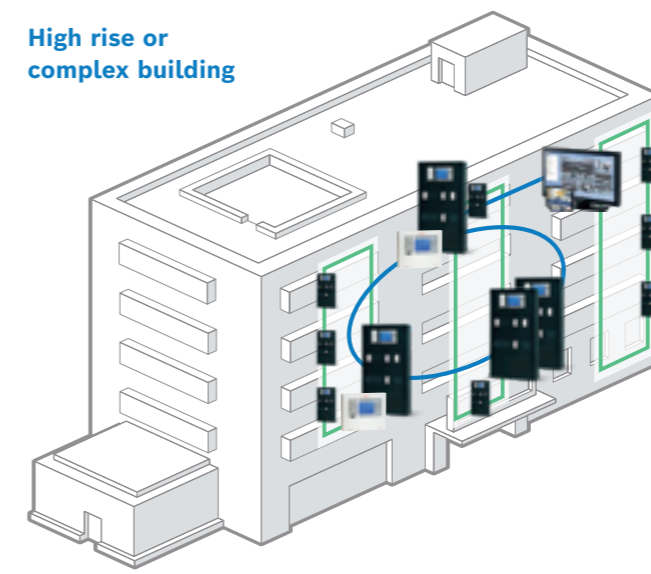
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Mit nyer, ha Bosch-t választja?	Hogyan éri el ezeket a Bosch?
<b>Megbízhatóságot:</b>  Emberek és értékek védelme  Üzletmenet folytonossága	 Az innovatív technológiák, mesterséges intelligencia és intelligens érzékelők alkalmazásával
<b>Rugalmasságot és tartósságot:</b>  Befektetési védelme  Legkorszerűbb technológiák integrálása	 Teljesen moduláris központtal  Kompatibilitással a régebbi és újabb rendszerekkel
<b>Értékes szolgáltatásokat:</b>  Hatékonyság növelése, költségek csökkentése  Kiegészítő szolgáltatások	 Oktatásokkal és folyamatos támogatással  Tervezői szoftver, távmenedzment lehetősé

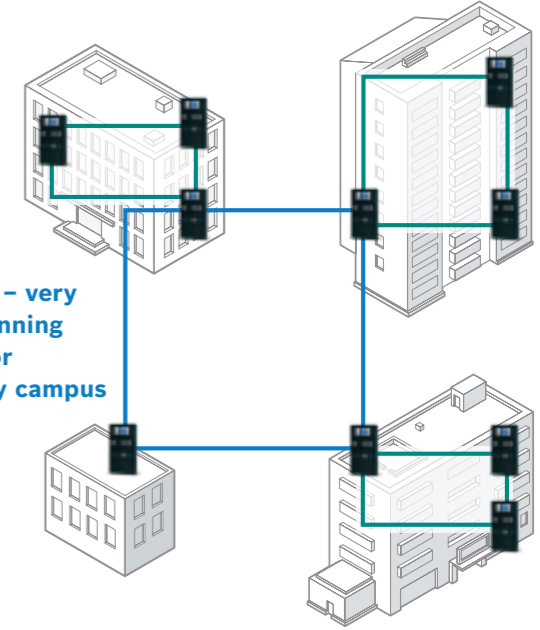
# 01 Get ready for tomorrow's smart buildings and Internet of Things



High rise or complex building



Extensive campus - very large network spanning large distances, for example university campus



The various housings, modules and rails result in a tailored system that you can economically extend as your business needs grow. You only buy the components that you really need!

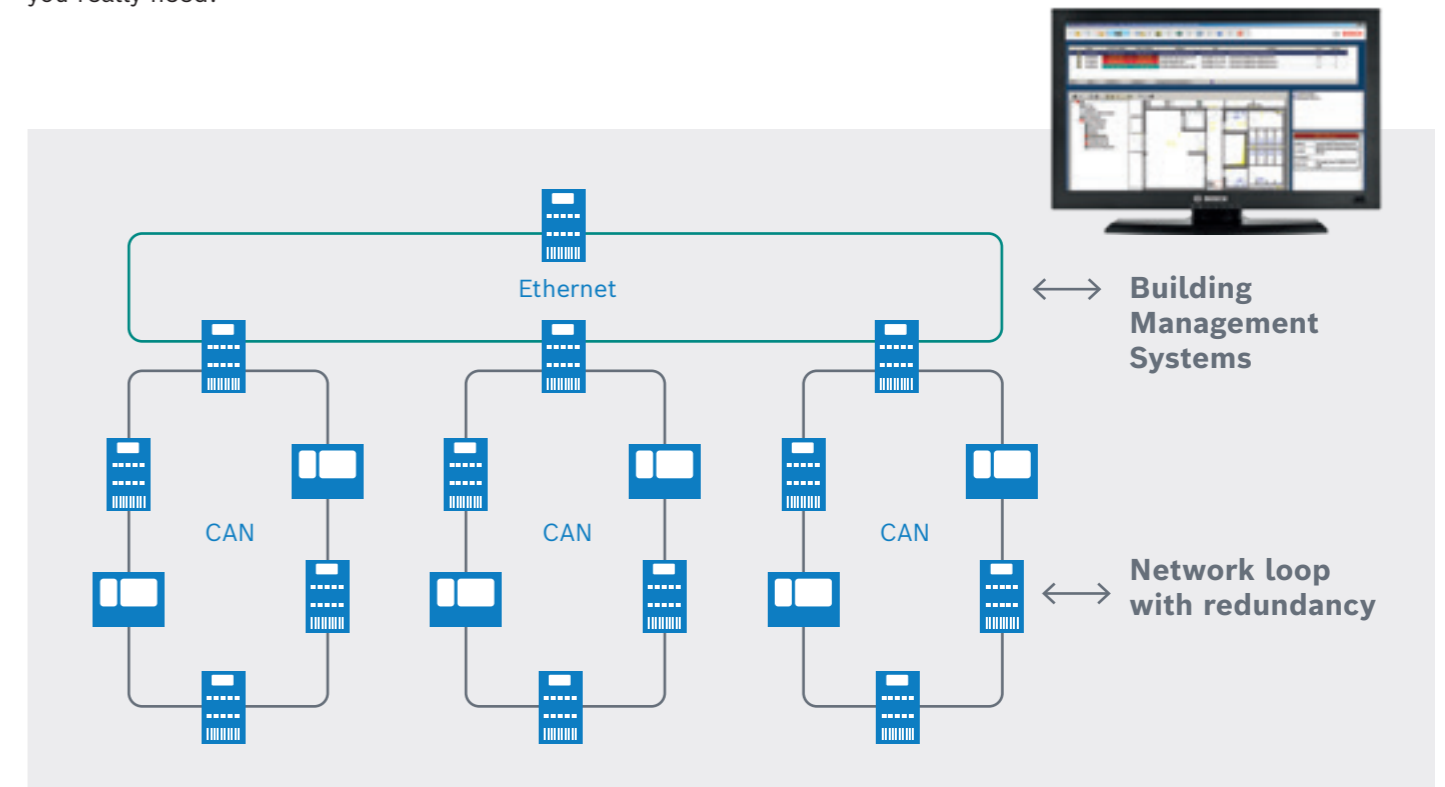
Bosch provides you with the unique opportunity to configure your own system according to the modular principle and your specific needs. The reusable “click-and-go” modules, the interchangeable housings, the practical CAN bus mounting and the “hot plug” feature make this possible.

**Panel networking**  
The CAN bus technology operates on a peer-to-peer basis ensuring reliable functionality even if an error occurs. The different loops of the network provide flexibility and allow the system to be adapted to personal requirements. Setting up zones within the network connections, provided by either standard copper or fiber-optic cables, as well as Ethernet, facilitates smooth administration.

**Remote control**  
AVENAR keypad 8000 remote control unit gives full command of the control panel or the panel network by means of a CAN bus. It offers a high degree of functionality, without the need for additional training, together with an attractive design.

**Seamless integration of voice alarm via Smart Safety Link from Bosch**  
Right out of the box, AVENAR fire alarm panels interface with our voice alarm solutions. This integration supports advanced functionality such as guided evacuation by building zones, allowing operators a high level of situational intelligence and optimized response times. Additionally, the solution significantly reduces installation time and costs by minimizing cabling requirements.

**Integration in business management systems**  
Connected to the building management system (BIS) and interfaced with the panel controller through an Ethernet interface and the OPC protocol, no additional interface module is required.



Panel networking via CAN or Ethernet network. Combined CAN networks with high-performance IP Ethernet backbone.

## 02 AVENAR panel

### Are you ready for...

AVENAR panel 2000 and 8000 is the innovative fire alarm panel platform offering unparalleled connectivity and scalability from small to large-sized installations. Users can now fully control safety equipment such as voice alarm, door controls, and more, directly on the panel display via eMatrix feature. The systems are future-proof and fully backwards compatible for sustainable investments, keeping costs for extensions and retrofits at a minimum.



The panel series supports the transformation of building technologies driven by the Internet of Things (IoT). Fully backwards compatible with current fire alarm system components, the AVENAR panel 2000 and 8000 series presents significant improvements in terms of scalability, integration, and processing power. It offers a new level of safety, control and efficiency.

#### AVENAR panel 2000 for small and medium projects

AVENAR panel 2000 is the key solution for smaller projects. It supports up to four loops thereby extending the applications from small projects to medium projects with up to 512 detectors and call points. AVENAR 2000 panels can connect to a panel network, allowing customers to distribute the intelligence of the fire system in the building while saving cabling costs. Furthermore, AVENAR panel 2000 simplifies the planning and purchasing process for system integrators, as it comes as a complete fire alarm panel kit, expandable in modular fashion.

#### AVENAR panel 8000 – a solution for all project sizes

For larger-scale installations, AVENAR panel 8000, the successor of the Modular Fire Panel 5000 Series, allows for up to 32 loops and a total of up to 4096 detectors and call points per panel.

Both panels support the current generation of fire detectors based on Local Security Network (LSNi) connections, as well as call stations and other critical system components. The panels can be installed alongside existing network architectures such as our Modular Fire Panel 5000 Series. The possibility to build one common network around AVENAR panel 2000 and 8000 as well as AVENAR keypad 8000 and Modular Fire Panel 5000 Series enhances network efficiency and utilizes the backward compatibility.

## Did you know that...

Bosch created its first fire alarm panel in 1920?

#### Modular system built for scalability and connectivity

Both panels support an Ethernet architecture with fast 100 Mbit connectivity. Four external Ethernet ports are available to link Bosch fire panels and Bosch voice alarm systems on a network, connect to building management systems or other safety systems and also enable remote services for cloud-based control and maintenance.

#### Fully controllable via graphical user interface (GUI) directly on fire panel

As a technical novelty, the eMatrix graphical user interface (GUI) offers full control via a 7-inch screen. The intuitive interface provides a clear status overview of connected fire protection equipment and evacuation zones. eMatrix also controls voice alarm, door control as well as HVAC (heating, ventilation and air-conditioning). It enables safety managers to optimize protection by monitoring automatically triggered evacuations and offers the possibility to interfere manually when required.



AVENAR panel 2000



Find out more



## BMS integration possibilities

In today's complex building environments, the demand for seamlessly integrated fire safety solutions with Building Management Systems (BMS) is growing rapidly. Seamless integration requires effective communication between critical systems, enhancing building safety, efficiency, and user experience.

AVENAR panels by Bosch are designed to meet these evolving needs with robust, flexible integration options. AVENAR panels allow customers to choose from different integration options to meet their requirements such as the level of integration, compatibility with existing installed software, or preference for standardized communication protocols.

# 03 NEXOSPACE Fire System Explorer

NEXOSPACE Fire System Explorer is the secure starting point for you and your customers to enter the Internet of Things with your fire alarm systems and benefit from the limitless possibilities of digital services. As a system integrator, you gain new remote insights into the systems you manage and can organize your services more transparently, effectively and efficiently for the benefit of your customers.

The frequent travel and phone calls that were previously necessary for configuration and maintenance of fire alarm systems are now a thing of the past thanks to remote services.



### Key functionalities

- **System status information:** Overview of all companies and systems including health status, connectivity, license validity and updates
- **Instant alerts:** Transmission of alerts via email and apps to increase reaction time to critical situations
- **Remote maintenance:** Early detection of potential issues through predictive maintenance, also preventing potential escalation to greater damage or system failure
- **Automatic documentation:** Detailed insight into service visits, spot checks and system status
- **Detector self-test:** Automatic detector tests, compliant with VDS-3860 and mandatory maintenance visits online

**Increased safety**  
NEXOSPACE Fire System Explorer provides close monitoring of fire alarm systems, enabling early detection of problems and minimizing downtime. This increases safety, prevents major damage and extends system lifespan.

**More efficiency**  
You reduce the need for on-site presence and save time by minimizing travel. Automated processes improve planning and resource allocation, increasing efficiency and reducing costs. You are better prepared for targeted service visits and conduct faster on-site testing.

**24/7 transparency**  
The cockpit of the NEXOSPACE Fire System Explorer offers you and your customers 24/7 comprehensive insights into all connected fire systems, enhancing transparency and trust. With flexible grouping options, you can easily manage systems by region, customer, or team.

**Stronger market position**  
Connecting your fire alarm systems to IoT positions your company as a technology leader, attracting customers looking for advanced solutions. The possibilities of digital services improve the customer experience, build loyalty and allow you to reallocate resources to drive growth and profitability.

Connect your AVENAR panel to NEXOSPACE Fire System Explorer via the cloud for remote access

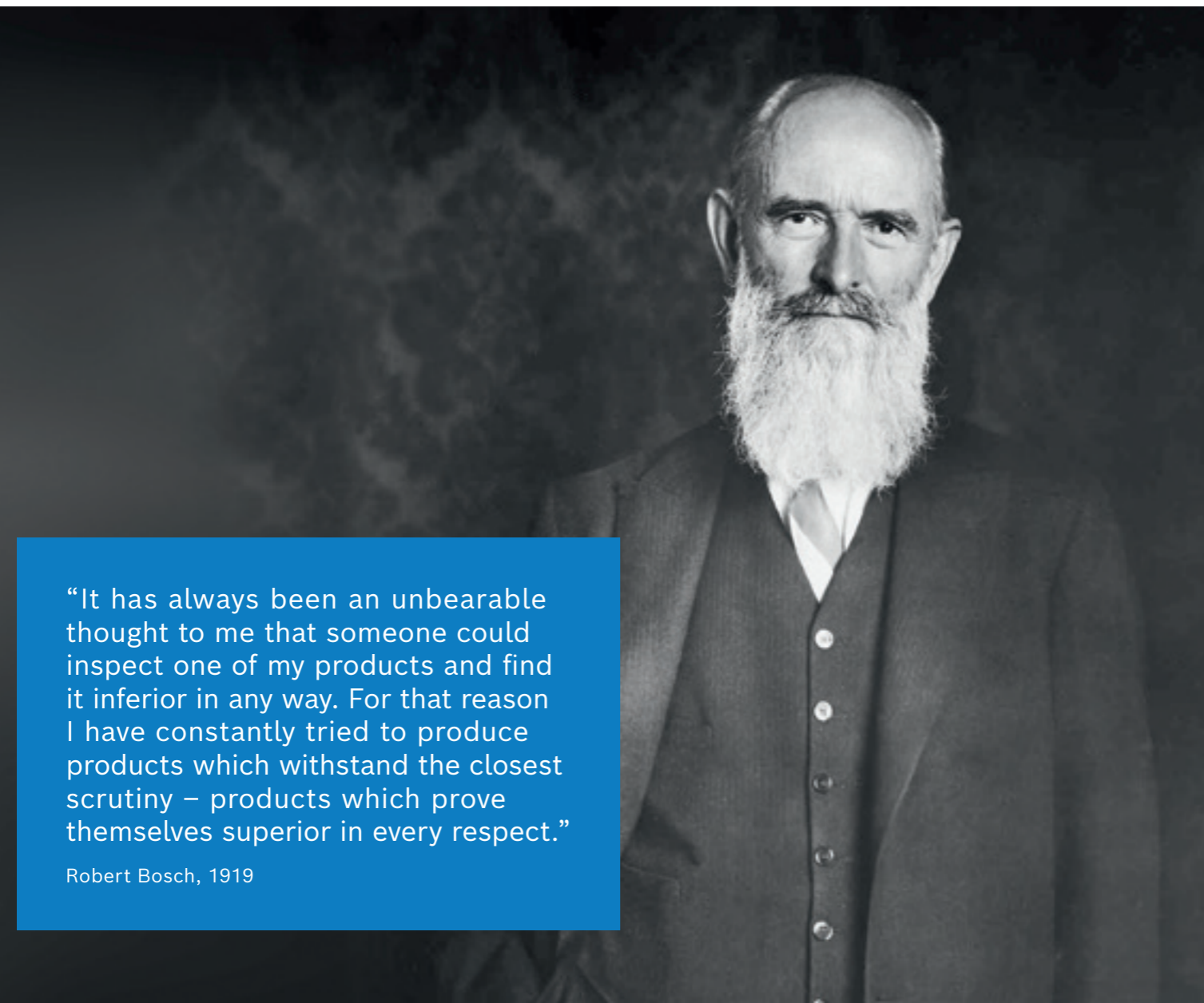
Find out more



## 04 Bosch Quality

### Fire detectors from Bosch are tested beyond specifications

As it is our commitment to guarantee 100% product and service quality, all fire detectors must first prove their worth inhouse passing tests even beyond specifications. For this, we even have our own fire laboratory near Munich where fire-fascinated employees set fires professionally in order to make fire detection systems safer.



“It has always been an unbearable thought to me that someone could inspect one of my products and find it inferior in any way. For that reason I have constantly tried to produce products which withstand the closest scrutiny – products which prove themselves superior in every respect.”

Robert Bosch, 1919

“With our own test laboratory, we can check our products prior to the official certification in order to make sure that we pass the test successfully and do not lose time-to-market.”

Robert Rett, test engineer for sensors and peripherals,  
Bosch Sicherheitssysteme GmbH



#### Playing with fire is welcome

Our team at the Fire Lab ensures top quality and performs test fires according to EN54 and UL268 standards. This is a necessary step to be approved by the testing institution VdS Schadenverhütung GmbH. Before receiving the approval, every fire detection product on the market has previously passed various standard tests. These include a series of different fires that show how the detectors perform under different conditions. In order to prevent any delays in the certification process, we carry out the tests under the same conditions as in the VdS laboratory where each new product is inspected prior to the actual certification.

TF4, or test fire 4 is an example for one of these standard tests and involves burning a polyurethane plate. After setting the material on fire, the plastic develops flames within seconds and soon fills the fire lab's test chamber also with thick smoke. The entire process is observed in the control room where we monitor on screens which fire detector has triggered an alarm after how many seconds.

#### Testing resistance to disturbance values

Furthermore, at our own fire laboratory we go even beyond the specifications and carry out self-conceived tests, which are not required, but necessary to ensure the highest reliability of the detectors. These disturbance tests make sure that our fire detection systems are resistant against any external interference variables. We control if the fire detectors trigger an alarm when they recognize cigarette smoke or steam (e.g. in the bathroom or kitchen) or if they can distinguish it from a real fire.

#### Smoke Tunnel

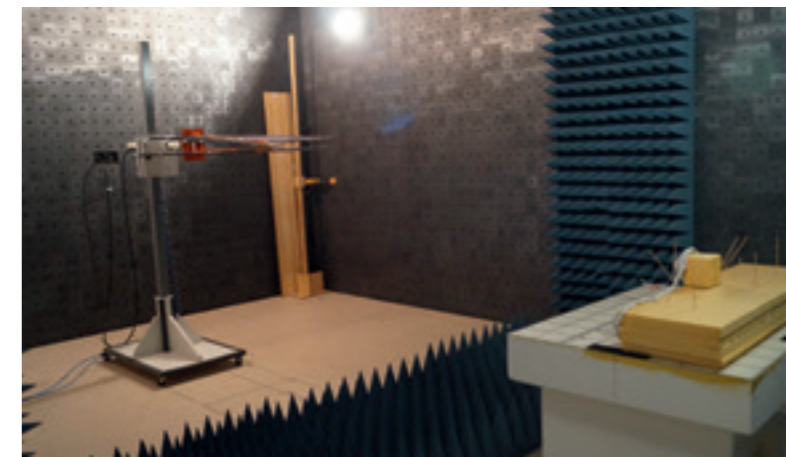
The disturbance tests are slightly different. We want to ensure that the video-based fire detector AVIOTEC detects fire and smoke correctly. Direct spotlights shine into the camera and ventilators blow smoke in all directions. Photo canvases have been used to see if AVIOTEC can detect fires correctly even against different backdrops. This shows how thoroughly AVIOTEC is put to the test to prove its reliability even under difficult conditions.

#### Electromagnetic compatibility

Besides ensuring that our fire detection systems perform in the event of a real fire, we also test emission and immunity in our internal EMC (electromagnetic compatibility) Lab. The detectors are checked for different types of emissions, e.g. radiated or conducted emission, and it must be proven that no voltage fluctuations and flickering occur. In addition, in the lab we control whether the products are immune to surge voltages, electrostatic discharge and radiated electromagnetic fields.

At the third laboratory, the Sensor Lab, we perform tests in a so-called smoke tunnel, that is identical to the official one at the test institute.

Here we check our detectors' sensitivities and monitor corrosion properties – all this to be able to offer intelligent detection and superior protection.



## Mr. Rett – the arsonist by profession

Flames and smoke are his profession: In a laboratory near Munich, Robert Rett plays with fire to make fire detection systems safer.

Robert Rett is completely alone in the control room of Bosch's fire laboratory in Ottobrunn near Munich. Through a glass pane, he gazes into a white-tiled room that has polyurethane plates on the floor, and presses a button. He only triggers a small flame, but within seconds, the plastic starts to smoke, and only two minutes later the view into the room is completely blocked with thick, white smoke.

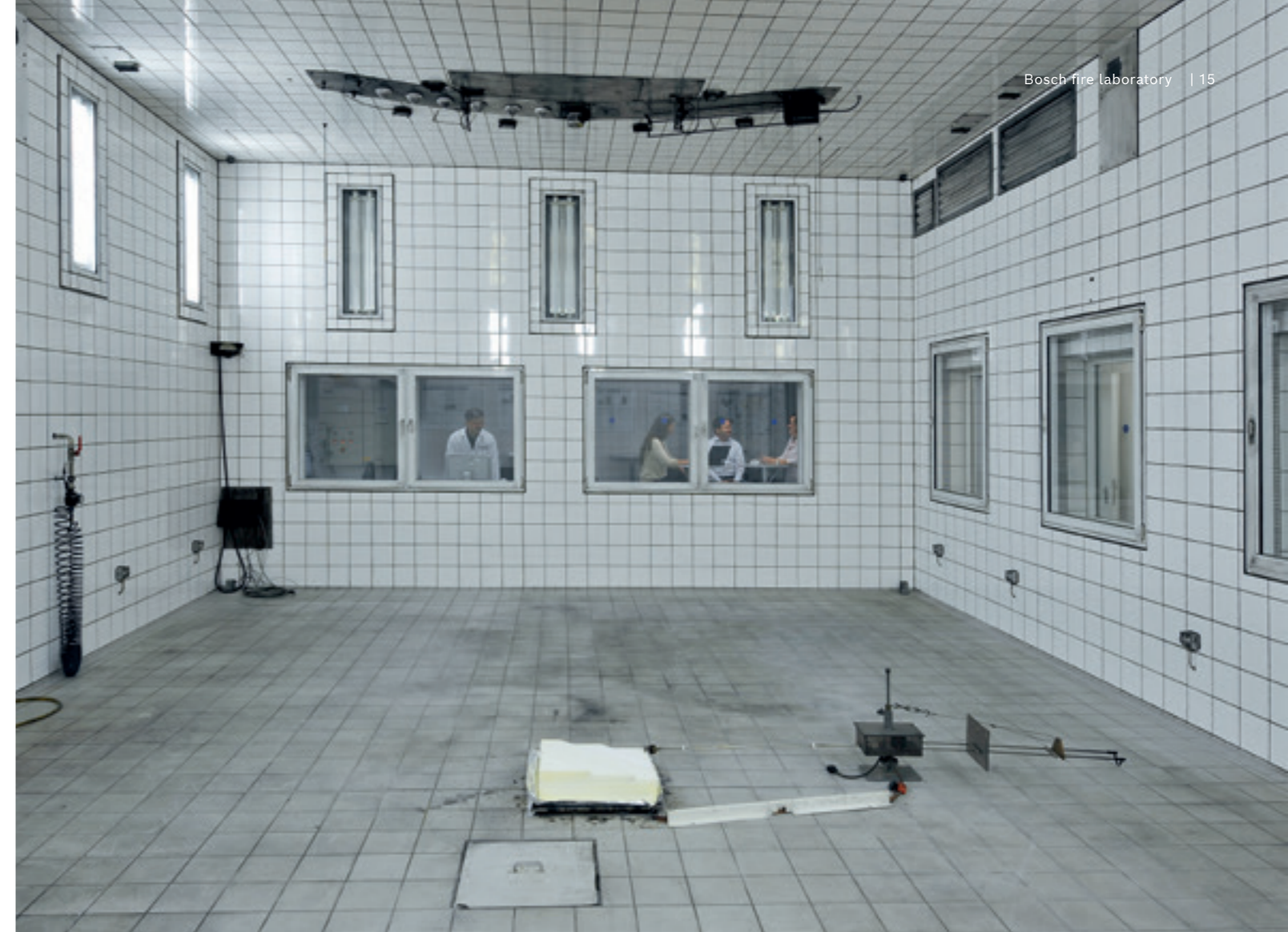
On the screen in front of him, Rett observes when and how the fire detectors mounted on the ceiling of the fire laboratory are triggered. This test, known as Fire Test 4, is one of the standard tests that all fire detection products made by Bosch must undergo. It is standard because it is one of many fire tests necessary to gain approval by the testing institution VdS (Verband der Sachversicherer) Schadenverhütung GmbH.

"We carry out all norm tests under the same conditions as in the test laboratory. Faults that only became apparent during the certification process would result in huge delays," explains Rett. Faults – that might mean that fire detectors are triggered too late or not at all. It could also mean that they are triggered although there is no fire. That is a problem because repeated false alarms mean that people no longer believe they are in any danger.



"Fire detectors protect life and property and must therefore be reliable," says Rett. For the last years, the qualified electrician has been responsible for precisely that in the fire laboratory. "Knowledge about fires and the way we use them here in standard conditions is not something you can train somebody for; it just takes experience," explains Rett. This is exactly what fascinates this level-headed man, who is now piling up small logs for the next test.

Every time he works in the fire laboratory, there are different products or different conditions being tested. Today, in addition to a range of fire detectors, three AVIOTEC cameras, which are used to facilitate video-based early fire detection, are suspended from the ceiling. They are among the latest Bosch developments for public and industrial use in enclosed spaces: The networked cameras can reliably detect smoke and flames – as already shown in the first test, it is these cameras that report the fire in the laboratory first.



"AVIOTEC cameras are IP-based and can be used via a shared user interface within the network, which we have set up especially for this purpose. The system is then put through its paces," explains Rett. Spotlights that shine directly into the camera have been set up. Various ventilation conditions have been simulated using fans that blow the smoke in all directions. Photo canvases have been used to see if AVIOTEC can detect fires correctly even against different backdrops.

Rett also carries out these specially conceived tests for conventional fire detectors. He refers to them as "disturbance tests," and they often consist of him using cigarettes, sparklers, or steam to test the alarms' reliability. Tests of this nature are not legally required, but as Robert Rett knows from experience: "Better safe than sorry."



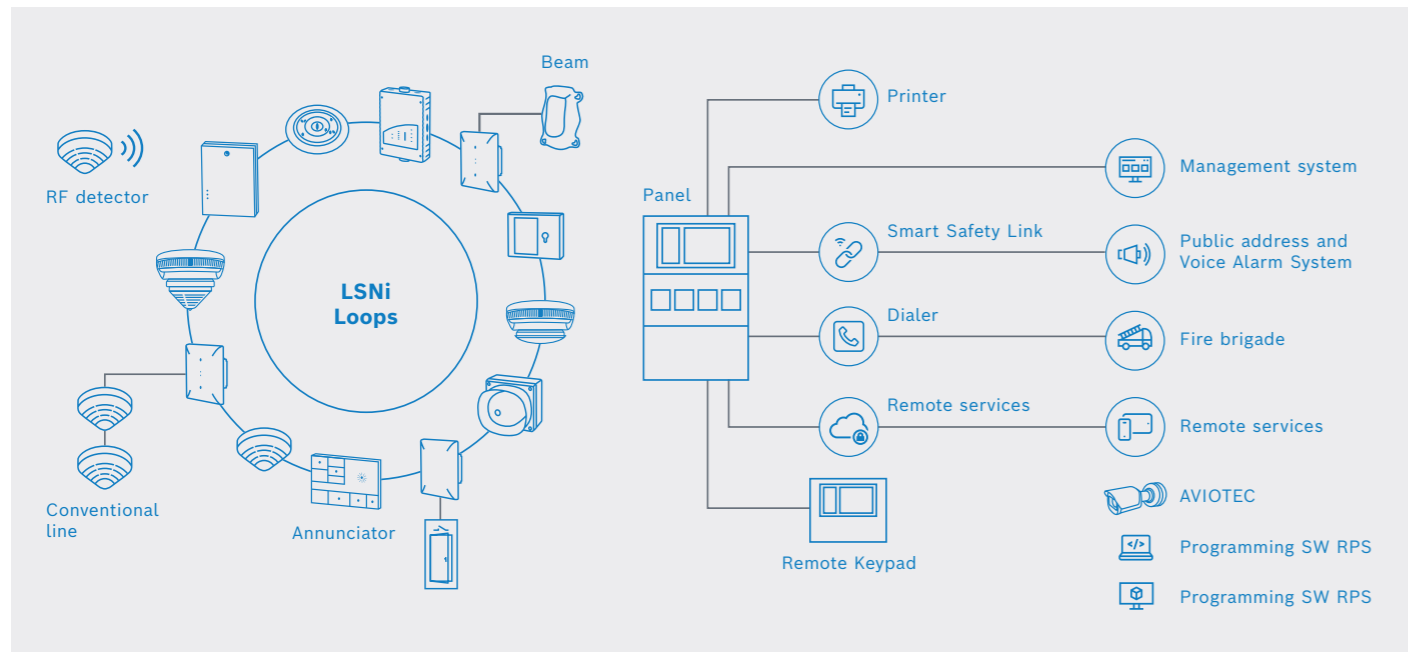
Find out more

Did you know that...

Robert performs more than 400 test fires per year?

# All you need to detect, report and visualize a fire

Bosch has an extensive range of addressable and conventional products in the fields of fire detection, voice alarm and risk management. These products allow you to realize a tailor-made and comprehensive concept for almost any project, without neglecting aesthetics, standards or market requirements.



System overview



### Uninterruptible Sounders

The FNM-420U Series, available in indoor and outdoor variants, never fail to perform with their low power consumption and high volume, significantly reducing operating costs. With their own high performance energy source, they ensure non-stop notification, and enable fast responsiveness and steadfast operation.



### Interface modules

Fire detection systems are usually connected to other building systems, like fire dampers, signaling devices, or fire doors. When a fire breaks out, input/output (IO) modules facilitate a prompt and coordinated response to a fire. AVENAR IO module 4000 series are multi-application, smart and compact and ensure a seamless fire alarm response.



### Automatic fire detectors

We offer a broad range of intelligent automatic detectors with high reliability, used for premises and items with a medium or high concentration of valuable assets. Various detection technologies ensure early, state-of-the-art fire detection with practically no false alarms.



### Special detectors

In buildings that do not allow the installation of point-type detectors, e.g. linear heat detectors, aspirating smoke systems, flame detectors and beam detectors provide customized protection.



### Manual call points

Our range includes single-action and double-action manual call points which can be employed in our addressable LocalSecurityNetwork (LSN) as well as in conventional technology. Both large and small design types are available for different applications.



### Wireless

With our generation of wireless detectors, we offer a flexible fire protection solution that works almost entirely without cabling. It is therefore ideally suited for historical buildings, for retrofitting and expansion of existing buildings, and for temporary installations. Thanks to the combination of two frequency bands and highly reliable mesh technology, the new wireless fire alarm system offers high system availability and maximum protection. The solution consists of a gateway, which is connected to the fire alarm system by cable, as well as up to 30 detectors and 10 manual call points, which communicate with the gateway by radio and can therefore be installed anywhere without cabling.



### Sounders and strobes

When every second counts, sounders and strobes for local alarm actuation will signal the occurrence of a fire. Indoor and outdoor variants as well as uninterruptible versions and signaling devices that combine visual and acoustic alarms in just one device complete the range. Alarm indicators for fire detectors in false floors and ceilings are also part of the portfolio. They have a low power consumption and will give you distinct advantages.

Get best-in-class fire systems providing precision and accurate performance to discover, inform and visualize incidents to achieve faster responses and thus minimize damage and downtime.



Find out more

## 05 Highlight: AVENAR IO module 4000 series

The AVENAR IO module 4000 series comprises new Bosch interface modules to optimize and customize the efficiency and robustness of fire detection solutions across multiple applications from overseeing special fire detectors to ensure they will alert the fire alarm panel if signs of fire are detected, to controlling the locks and release mechanism of electronic doors. Bosch addresses this need with the latest addition to the cutting-edge AVENAR portfolio: The AVENAR IO module 4000 series.



Fire detection systems are usually connected to other building systems, like fire dampers, signaling devices, and fire doors. Each building is unique, so the specific needs for how these systems connect can differ. Interface modules help fire safety managers ensure that all connected systems work together effectively when a fire alarm goes off.

Input/output (IO) modules facilitate a prompt and coordinated response to a fire by providing the interactive link between all devices and systems from one central point. They also assist safety managers with continual monitoring of operations across an entire premises and diagnostics for identifying the source of a fire or system interference – all while fire detectors and alarms are kept up and running.

### Multi-Application, Smart & Compact



The AVENAR IO 4000 module can be integrated to increase efficiency in multiple fire safety applications. This offers flexibility for planning a fast fire alarm response, including the control, operation and monitoring of facilities such as fire exits, sprinkler systems and dampers.



Thanks to its configurable software, the AVENAR IO module 4000 enhances security and provides tailored solutions. In the event of a fieldbus failure or power loss, the module features a fail-safe option that allows users to control how devices respond, ensuring that safety standards are maintained. Additionally, its configurable software enables improved digital connectivity between a building's devices.



The interface modules feature a modern, compact design which saves space in tight installation points like cabinets and boiler rooms. The IO modules are optimized with easy cabling and for simple installation on DIN rails. Plus, their low energy consumption means more devices can be included within one loop.



### Use case fire damper control

Integrating fire dampers with the FLM-430-I2M1 module allows this equipment to be fully customized, thanks to the IO module's smart technology. Damper settings can be controlled between fully or partially open or closed for reliable operation. Faults such as obstructions can be automatically detected and visually indicated by LED displays on the module. Depending on requirements, the interface module and damper status can be software-configured and adapted for specific status monitoring, with double resistor or triple resistor options for two or three positions respectively.

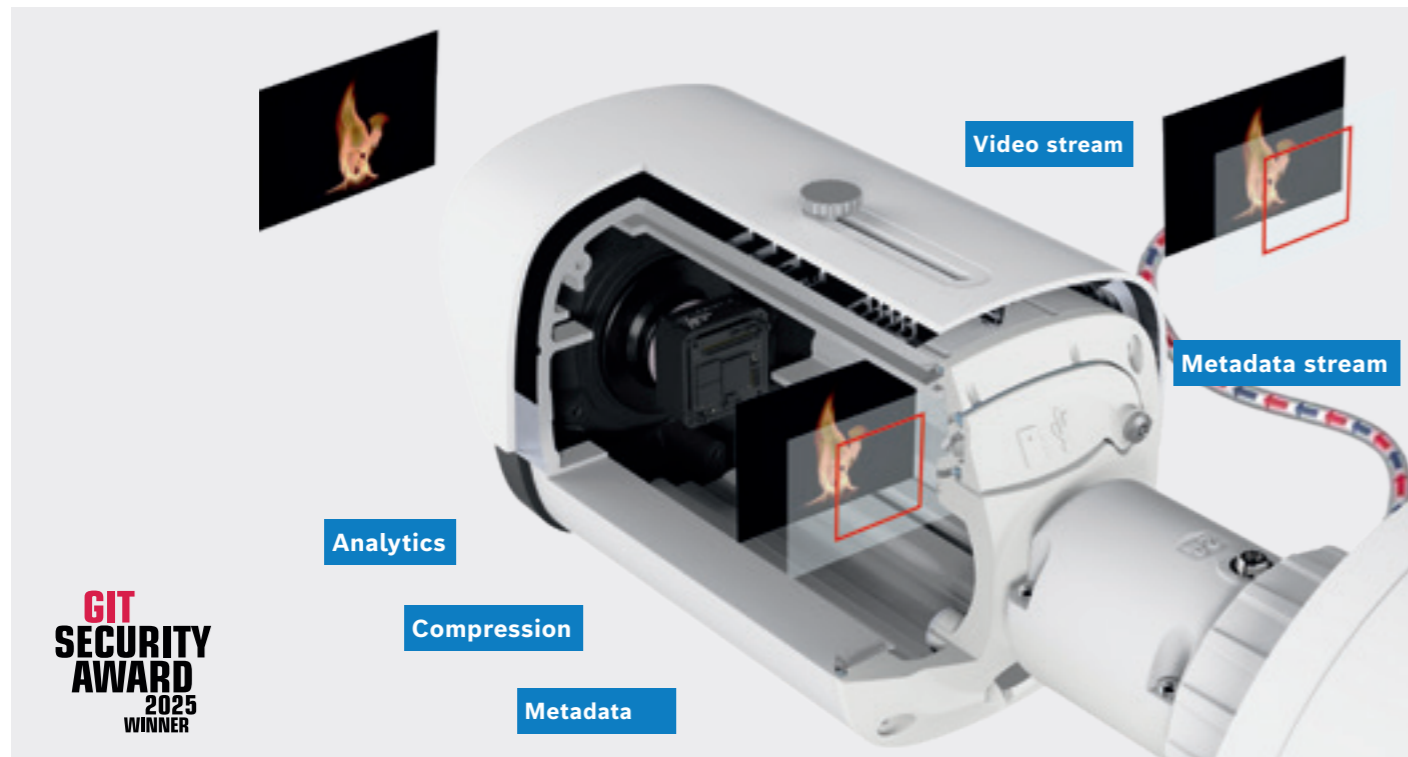


Find out more

## 06 See it before it spreads

### From daylight to no light: AVIOTEC Video-based fire detection

It is vital to detect fire as early as possible and sometimes you need more than one pair of eyes. AVIOTEC is an IP camera with built-in intelligence to detect fire and smoke. The trained algorithm detects flames and smoke directly at the source. The device can therefore detect fires faster than a common point type detector on a ceiling.



#### AVIOTEC algorithm technology – how does it work?

Faster and more accurate: Bosch’s video-based fire detection system is based on the capability of various analysis techniques that examine live images for fires. Utilizing a unique, scientifically tested physical detection model, Bosch technology spots fires and disturbances, predicts behaviour to reduce false alarms and speeds up reaction times – helping you stop threats before they spread.

AVIOTEC is VdS-certified and the perfect answer for facilities used for industry, transportation, warehousing and adjoining outdoor areas to minimize detection time with low false alarm rates.

Compared to infrared and thermal imaging cameras, AVIOTEC uses optical analyses to detect flames and smoke. The fire detection technology has grown in its variety of application and stability over the last few years thanks to the use of artificial intelligence.



Find out more

#### At a glance

- **Detection of flames and smoke**  
Identify even hidden fires, smoldering fires and burning liquids
- **Fast detection at the source**  
Detect fires where they start, speeding up reaction times, improving rescue response and minimizing damage on site
- **Detection in complete darkness**  
Optimize surveillance together with IR illumination
- **Outdoor applications close to buildings**  
Ensure dependable operation via innovative AI-algorithms
- **Real time monitoring**  
View the situation and speed up response time
- **Video storage**  
Perform root-cause analysis with recorded videos

### Did you know that...

our AVIOTEC 8000i IR camera can detect fires directly at the source within seconds?



#### Reference Incarpalm – paperboard factory in Ecuador

Manufacturing plants in the pulp and paper industry have to be vigilant to fire risks. An entire business could literally go up in smoke if signs of ignition are not detected immediately.

The huge IncarPalm paperboard factory houses industrial machinery to corrugate cardboard in huge quantities. Their paper-based raw materials generate dry, dusty, highly flammable conditions. In recent years, local legal requirements were updated in collaboration with fire protection services.

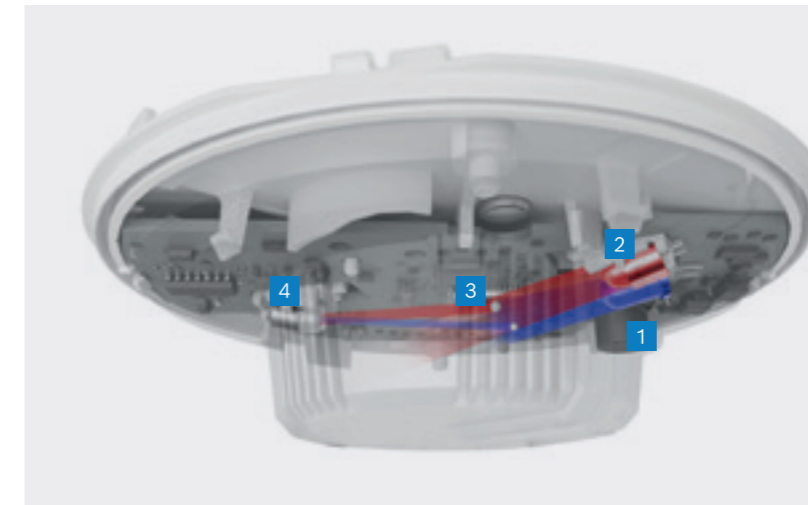
IncarPalm found the perfect solution after a demonstration of AVIOTEC’s video analytics for fire detection especially as no other technology they explored in the past provided an adequate solution for the factory’s fire safety needs.



Find out more

# 07 Smarter against fire

Bosch offers a series of fire detectors which combine unsurpassed reliability with outstanding detection performance.



**Dual Ray Technology**  
Detectors featuring Dual Ray Technology offer exceptional precision, effectively identifying visible disturbances like steam or smoke. This advanced capability leads to fewer false alarms, ensuring peace of mind.

- 1 | Blue LED
- 2 | Infrared LED
- 3 | Scattered light
- 4 | Photodiode



Did you know that...  
the Dual Ray technology in our detectors precisely distinguishes between smoke and water steam?

### A clean solution – Linen supplier Synergy Health standardizes on Bosch Dual Ray Technology

Synergy Health is a global company specializing in the sterilization of medical equipment and the supply of linen, particularly for the healthcare sector. The company offers a comprehensive range of services across the Netherlands – including the rental and washing of bed linen, professional clothing and linen for operating rooms.

During a complete replacement of its fire protection systems, Dutch linen supplier Synergy Health installed Bosch fire panels and detectors in eight subsidiaries.

In Synergy Health's laundries, high fire risk meets very demanding environmental conditions due to humidity, steam and dust. The company therefore needed a solution that could detect smoke and fire as reliably as it could differentiate between real alarm conditions and disturbance values to minimize costly false alarms. AVENAR detector 4000 series with Dual Ray Technology proved to be the answer.



**Early detection even in most challenging conditions**  
In the world of fire detection, precision and reliability are essential. AVENAR detectors 4000 series offer eight different types of automatic fire detectors all with built-in short-circuit isolators and with different kind of sensors. They include optical and dual-optical detectors, some of which also provide multi-criteria detection including thermal and/or chemical detection. The combination of these three specific types of sensors is an approach invented by Bosch.

AVENAR detector 4000 uses Bosch's own Intelligent Signal Processing (ISP) technology, which achieves the highest level of intelligent fire detection. A heat detector is also part of the range. Some models include rotary switches for manual addressing in stub topologies, while models without such switches allow cost savings in ring topologies, where addressing is automated.

**Protect people, property and premises**  
For the next step in precision, the detector series also includes four variants with the innovative Dual Ray Technology for even more accurate and early fire detection everywhere. It distinguishes visible disturbance values, such as dust, steam and cigarette smoke, by determining smoke density and particle sizes. It does this by comparing the intensity of scattered light from the differing wavelengths of two LED sources, one infrared and one blue. These technologies offer customers early detection in even the most challenging environments, including night clubs, parking garages and computer rooms.

Added together, these many features result in the highest reliability, and the assurance that an alarm is only signaled in a true emergency.



Find out more

# eSmog: The next level of precision

## Decrease invisible false alarm causes

### Bosch fire detectors maximize detection performance

Modern buildings are increasingly equipped with complex technical infrastructure. This trend leads to a tendency of increased electromagnetic pollution, which creates challenges for any installed electrical equipment. It is estimated that between 20%-30% of today's false alarms have undetermined causes. It is hard for technicians to prevent the situations if the root cause is not clarified.

### Mobile phones and escalators can create disturbance

With its eSmog feature, AVENAR detector 4000 takes these new circumstances into account. Its robustness against electromagnetic pollution and its information about invisible disturbance values, such as escalators, mobile phones and routers, allow the system integrator to identify and resolve critical conditions even quicker, saving time and money.

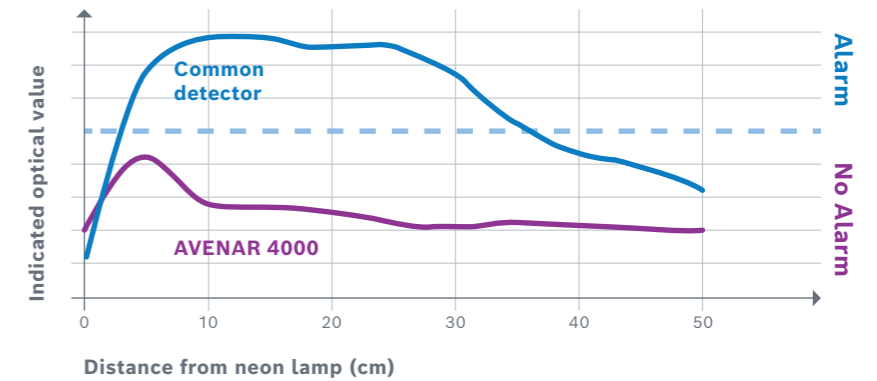
In addition, stability and detection performance are further enhanced during operation and maintenance by constantly measuring the electromagnetic exposure of each detector and calculating mid- and long-term averages. These are used to predict the exceeding of threshold values even before possible false alarms can occur.



## Did you know that...

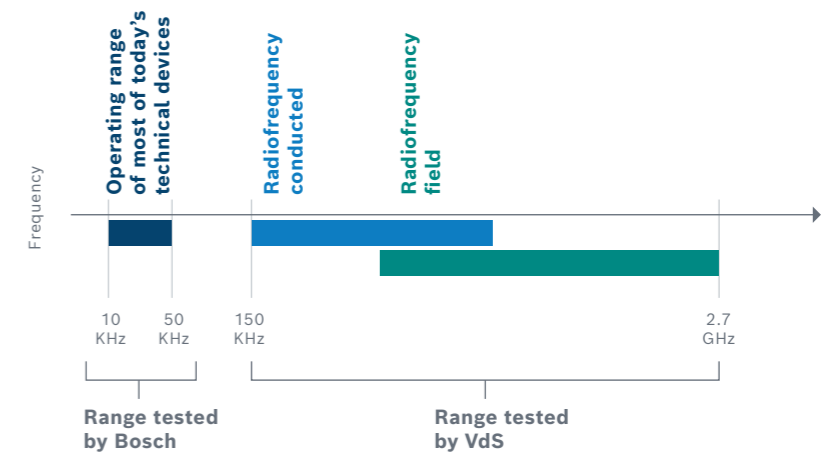
20% – 30% of today's false alarms have undetermined causes?

Increased electromagnetic robustness



The graph shows the optical value of the detector which varies because of the influence of electromagnetic fields when no smoke is detected (as a function of the distance).

Electromagnetic indication and monitoring



Common electronic devices are emitting electromagnetic fields with a frequency that is not tested by standards and norms. Changing technical environments require high electromagnetic robustness to operate absolutely impeccably.

# 08 Highlight: AVENAR all-in-one 4000

With AVENAR all-in-one 4000, we offer a range of signaling devices that combine visual and acoustic alarms in just one device. Optionally, any fire detectors of the AVENAR family can be combined with the signaling device in one device, so that a cost-saving and space-saving complete solution is created that can significantly reduce installation and maintenance costs. The signaling devices are certified according to EN54-3 and EN54-23 Category C, for ceiling mount, and W, for wall mount, and with protection class IP 42 are suitable for almost all applications in buildings.

### Alarming part (including battery)

EN54-23: optical signalling, flasher ring with 12 LEDs  
EN54-3: acoustical part, 32 preprogrammed tones with up to 97 db(A)

### Cover part

With detection, combination with AVENAR detector 4000 series  
Without detection, cover in red or white color



### (Unit-) base

For easy (pre-) mounting and cabling

### Detector base

Fits with detector or cover  
Option for detector removal protection

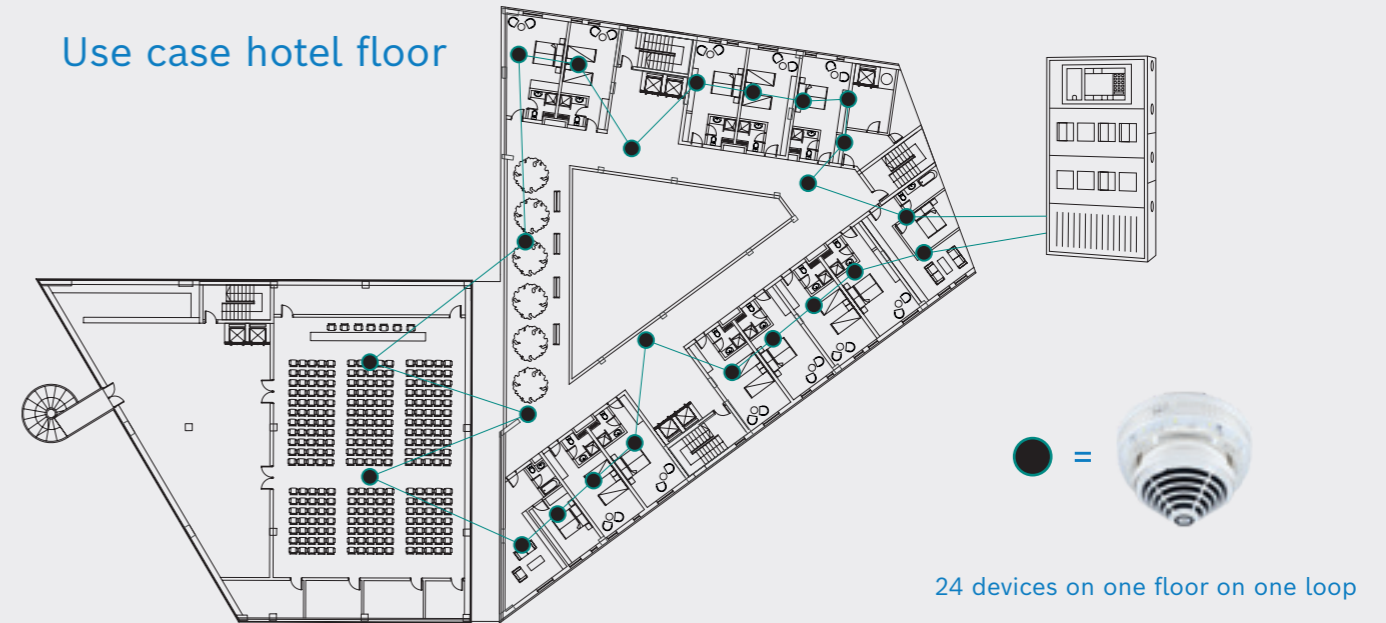
### Up to 125 devices on a ring bus

AVENAR all-in-one 4000 is characterized by its extremely low power consumption, so that up to 125 devices can be installed on just one ring bus. The integrated battery with a service life of up to 10 years also ensures uninterrupted alarming even if the bus fails. This means that complex and expensive E-30 cabling to ensure functional integrity will not be necessary for the installation.

### Focus on usability

When developing the AVENAR all-in-one 4000, we have given particular importance to simple installation and handling as well as flexible application options. The signal heads can be pre-assembled and are equipped with plug-in terminals, which significantly simplifies and speeds up installation. For different areas of application, you can choose between three intensity levels for both optical and acoustic alarms. On top, you can combine any fire detector from the AVENAR family with the signaling device. This means that you can also exchange fire detectors separately as part of your maintenance work, even without replacing the signal transmitter, which keeps maintenance costs low.

### Use case hotel floor



### Overview: Variance of type C, W and O

	Ceiling	Wall	Open
Mounting	Only ceiling mounting	Only wall mounting	Ceiling and wall mounting
Illumination area / square	Best choice for small room heights because of well defined standard	Best choice for small room heights because of well defined standard and also used in addition where ceiling mounted devices do not fully illuminate the room area	Best choice for rooms with heights above average because there is no standard and dimensions are defined by the manufacturer
Flexibility	No flexibility, (limited up to 3m mounting height, no wall mounting possible)	No flexibility, (limited up to 2.4m mounting height, no ceiling mounting possible)	Flexibility (mounting height open, for ceiling and wall possible)
Values	Defined by standard	Defined by standard	Defined by manufacturer
Power consumption	Comparatively lower as with O variant	Comparatively lower as with O variant	Higher (mostly)
Verticals			

“With up to 125 devices in a loop, we are defining an entirely new category in fire detection. This opens up completely new possibilities and considerable savings potential for planners, installers and operators.”

Sebastian Wehr, Product Manager at Bosch Building Technologies.

## 09 Invisible protection on any ceiling, ultra slim and easy to clean

The 500 Series is totally different, because it uses a virtual optical chamber. It is ultra-slim and lies flush with the ceiling – a distinct advantage which does not detract from the appearance of attractive rooms. Color rings that can be mounted in the detector also allow the units to be perfectly coordinated with the color of the surrounding ceiling.

### Discreet styling outside, Bosch know-how inside

The 500 Series combines built-in style with Bosch's proven know-how, ensuring a reliable investment for the future.

### Award collection – not dust collection

The Smoke Detector 500 Series features a virtual optical chamber, allowing it to blend seamlessly into ceilings without accumulating visible dirt. This design enhances reliability and simplifies cleaning, reducing service time and costs. Continuous dirt measurement triggers a signal when cleaning is needed.

### Powerful technology

The 500 Series employs a scattered-light fire detection system with dual detection areas, ensuring high reliability. It also offers a multi-sensor option with a carbon monoxide (CO) sensor, utilizing intelligent signal processing to minimize false alarms and expand its application range, even in challenging environments.

### Giving architects more freedom

With its low-profile design, the 500 Series remains unobtrusive on ceilings, allowing architects to prioritize aesthetics and overall design.

### The modern way – to secure aesthetics

Reliable fire detection with a touch of style: Bosch presents the invisible fire detector. A completely different concept combining a pleasing design with up-to-date technology.



Find out more

## 10 Monitored planning: Transparent and close to reality

Safety Systems Designer – your fire planning tool covering the full chain



Find out more

### The Safety Systems Designer – an easy-to-use tool

Thanks to generic terminology and intuitive navigation, there is no training needed – saving you costs and time.



### Planning fire alarm projects – a challenging task

This demanding business requires the inclusion of different parties at various planning stages along the complete value chain. We offer a solution that includes a plugin and a blocks library for AutoCAD® making it perfectly adaptable to your daily business. In addition it provides quick answers when it comes to initial budgeting and calculation. All features combined, Bosch provides an unmatched platform for your business. In the future, the Safety Systems Designer will be the only software you need to plan and calculate fire alarm systems.

### Project planning for fire protection on the next level

Bosch's planning and support tool enables users a precise design according to EN-54 regulations, including the allocation of peripherals on different loops. Taking into consideration the actual topology, the Safety Systems Designer ensures that every project detail is taken into account. This is made possible through a complete plausibility check and the automatized as well as customized provision of a comprehensive documentation, perfectly tailored to your needs.

# 11 Solutions that go beyond expectation

All around the world, Bosch solutions exceed customer expectations. The expertise and know-how of our partners and the quality of our technology make even the most demanding and complex environments safer.



## Reliable fire detection in a discreet timeless design for a hotel in Vevey

The Modern Times Hotel in Vevey, opened in 2016, sits beside Lake Geneva between Lausanne and Montreux. Close to Chaplin's World, it also pays tribute to Charlie Chaplin. Popular among tourists, it's also a venue for conferences and events, with 136 rooms requiring smooth operations. Manager Fabian Buecheler sought to upgrade fire safety systems but needed solutions blending with the hotel's décor. Standard white detectors risked clashing with the interior. Local integrators suggested Bosch's "invisible" flush-mount smoke detectors, available in sleek designs and various colors, ideal for maintaining the hotel's aesthetics in key areas like the lobby and meeting rooms.

"Bosch's invisible detectors offer not only functionality, but also aesthetic integrity."  
System integrator for Modern Times Hotel, Vevey



Find out more

"This innovative solution brought new, cutting-edge technology to the project, making it a truly groundbreaking and attractive offering."  
Fabian Buecheler, Manager, Modern Times Hotel in Vevey



## A scalable fire detection solution from Bosch keeps an ever-expanding tire plant reliably secure in Romania

Bosch has integrated a fully compatible fire detection system at Continental Tires Timisoara's tire production plant, ensuring reliable fire detection and protection for current operations and future expansions. Over 25 years, the plant has produced 300 million tires, including Ultra High Performance and innovative tires for electric vehicles.

Given the fire hazards from materials, power sources, and machinery heat, the ESH Manager sought a dependable solution that could expand with production. Compatibility among all fire detection, alarm, and emergency response components was crucial for efficient site monitoring.

"Our primary challenge revolved around the necessity for a fire detection solution that was applicable across the specified dimensions and adaptable to the frequent expansions of the plant."  
Marius Girbaci, Fire prevention coordinator, Continental Tires Timisoara

The Building Integration System (BIS) was chosen to manage the fire alarm system alongside other systems on a single platform. The installation includes 66 loops with 17 AVENAR 8000 panels, 3,500 AVENAR 4000 detectors, intrusion alarms, and manual call points. The scalable system ensures uninterrupted fire detection during site expansions, while intelligent signal processing in AVENAR detectors minimizes false alarms, supporting the plant's production demands.



Find out more



## Digital business continuity with redundancy-enabled fire detection for a renowned data center in India

Nxtra by Airtel, a subsidiary of Bharti Airtel Limited in India, operates over 100 data centers. The centers provide secure, scalable spaces to support digital operations, including a 4-Megawatt facility in Pune serving a global software company.

Data is a crucial asset for companies, requiring secure and accessible storage. Downtime can cause massive losses, and fires at data centers risk destroying valuable assets. False alarms, however, lead to unnecessary evacuations, power shutdowns, and costly disruptions.

"Bosch fire detection system's redundancy feature made me curious about evaluating their offerings. I believe that consideration of this will certainly be a game changer in our DC operations to ensure minimal downtime."  
Mr. Jimesh Chauhan, SME Electrical Nxtra

**Reliable fire detection is essential.**  
In 2022, Nxtra's MEP team sought a fire detection system for their Pune data center. A US consulting firm recommended solutions meeting stringent standards like VdS, UL, and FM. Bosch impressed Nxtra with their reliable, compliant systems, approved by VdS and NFPA72, ensuring high technical standards.



Find out more

# Why a Fire Alarm System from Bosch?

**You can rely on  
an early and  
accurate  
detection**

**It adapts to  
your current  
and future  
needs**

**You can profit  
from additional  
services to  
improve your  
operations and  
reduce costs**

**Bosch Building Technologies**

Visit [www.boschsecurity.com](http://www.boschsecurity.com)  
to learn more about our product offering

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