

Invented for life



**BOSCH**

# Fire Alarm Systems

Intelligent detection. Superior protection.


[www.boschsecurity.com](http://www.boschsecurity.com)



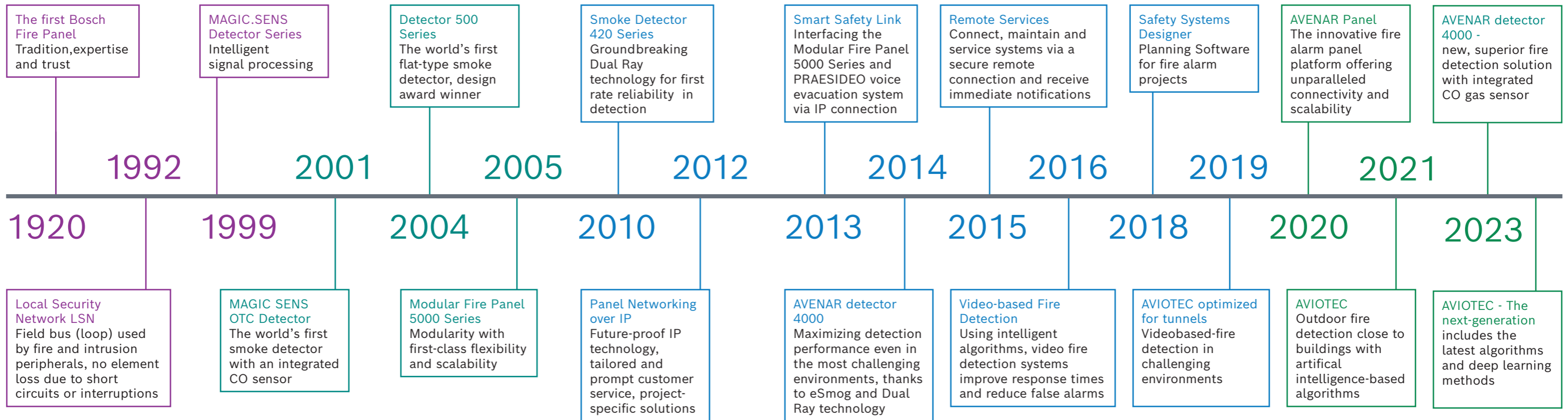
Keeping people **safe** is our **first priority**

# Bosch Milestones – Innovative Strength in Fire Detection Technology for over 100 years

**Did you know that...**  
 Bosch was the first company in the world to build a carbon monoxide sensor in its fire alarm detectors?



**100 Years**  
 Bosch Building Technologies  
 1920 – 2020



Bosch cares about safety. We design all of our products to assure users that their lives will not only be protected, but quickly and effectively saved. A swift response by the fire detection system is absolutely crucial for alerting services and getting help. And because all our products can be combined, a complete solution can be built from just one source.

**Put down the fire**  
 Rely on our 100 years of experience in fire alarm systems to offer you solutions to suit all applications. Our automatic detector series also includes multi-criteria and flush-mount variants that offer nearly invisible detection. We supplement these products with highly flexible, user-friendly control panels, such as the AVENAR panel series, for coordinating fire alarms and other event-related messages. Our unique panel design gives you tailor-made protection. Manual call points, sounders, strobes and interface modules, as well as special detectors and our video-based fire detection AVIOTEC complete the solution.

**Get the message across**  
 Evacuating a large number of people spread throughout a large site requires trained on-site personnel and a fail-safe voice alarm system. Bosch offers a range of highly robust solutions for sites of all sizes, for faster, more efficient and safer evacuations.

**As close as if you were there**  
 Preemptive maintenance is the key to preventing costly false alarms. It ensures timely and dependable fire detection. Remote Services enable technicians to be more efficient and effective with their service calls using remote diagnostics – saving costs, assets and lives. Our applications for iOS and Android via a secure cloud structure provide true push and instant notifications in case of fire alarms or system warnings.

A system as individual as you are

## Reliable, flexible and customer-specific

- 01 Fire alarm panels
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- 07 Highlight: Video-based fire detection
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With our expertise, portfolio and technology as well as with our close partnerships we can offer end-to-end solutions that are anticipating and sustainable and inspire new opportunities for you. Your Bosch fire alarm system provides you with the certainty to retain the value of your equipment, as all new systems designed by Bosch interact with previously installed systems. From reliable fire detection to advanced voice alarm, we deliver a safe, future-proof investment for any kind of location. In a technology-driven world, we offer you exactly what you need.

**Reliable** – Bosch offers a broad portfolio of EN- and UL-certified products\* and systems for accurate, reliable fire detection and notification. Our solutions provide precise, life-saving information at critical moments – you can count on us.

**Flexible** – Bosch gives you the opportunity to configure your own system according to your specific needs based on the modular principle. The system adapts to the nature and size of your facility's application, so you are provided with flexibility in your buying decisions.

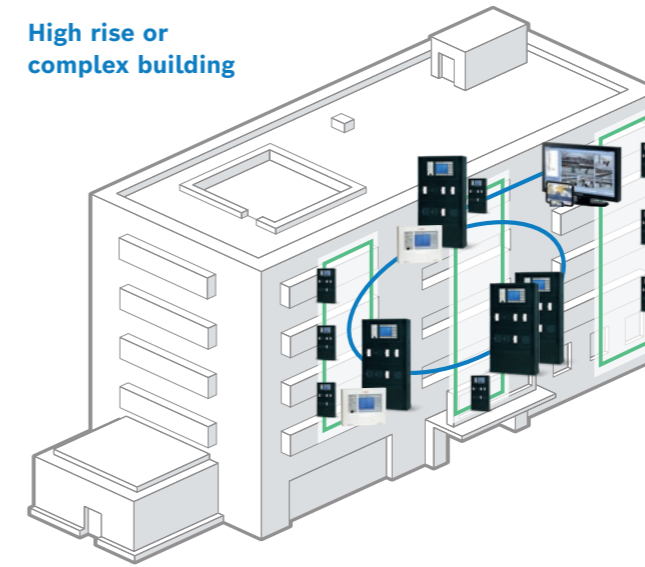
**Customer-specific** – Bosch offers you the unique software development kit (SDK) suite, containing all the tools to design customer-specific fire safety management systems and software modifications.

\* We offer a portfolio of fire systems dedicated to the UL market

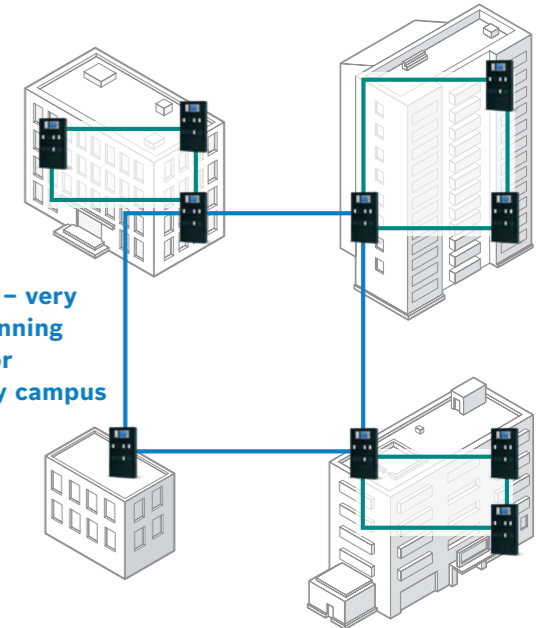
# 01 Get ready for tomorrow's smart buildings and Internet of Things



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**

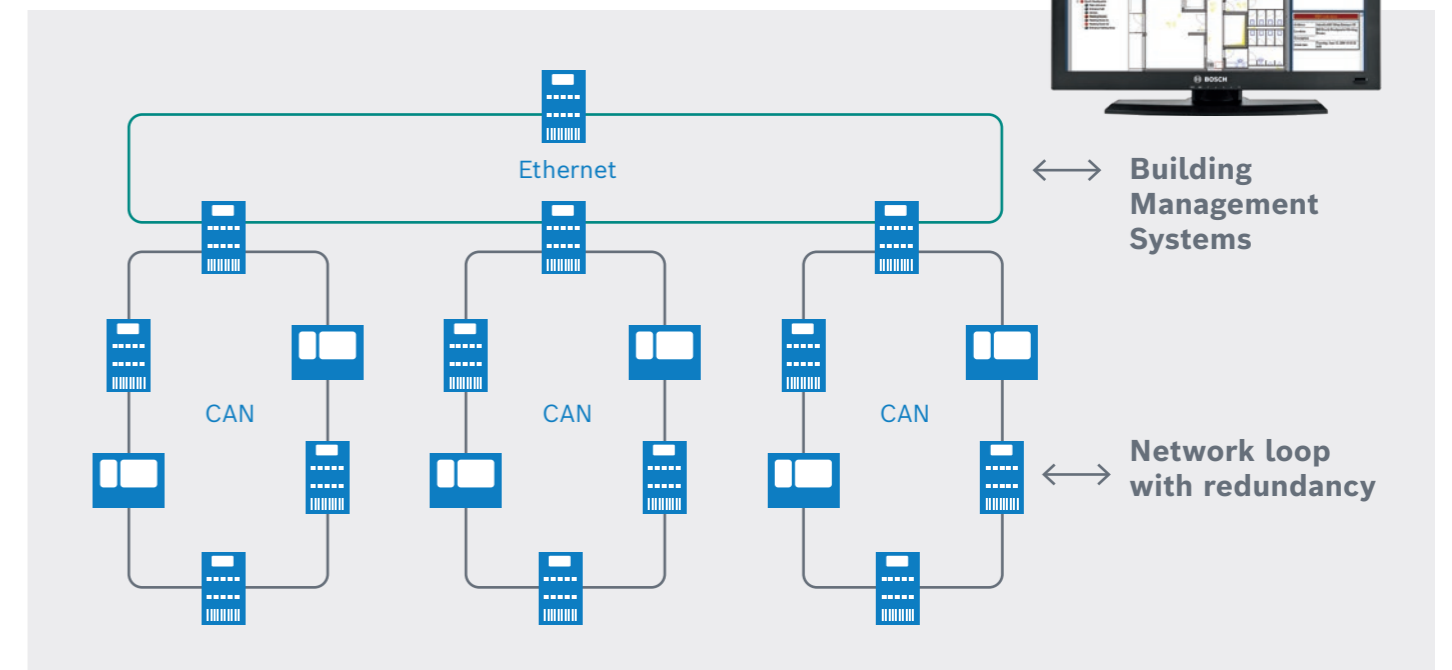
Right out of the box, AVENAR fire alarm panels interface with our voice alarm solutions. This integration supports advanced functionality such as guided evacuation by building zones, allowing operators a high level of situational intelligence and optimized response times. Additionally, the solution significantly 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.



Building Management Systems



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.



### Did you know that...

Bosch has created its first fire alarm panel in 1920?

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.



Watch the video "AVENAR panel" and learn more



AVENAR panel 2000

#### 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

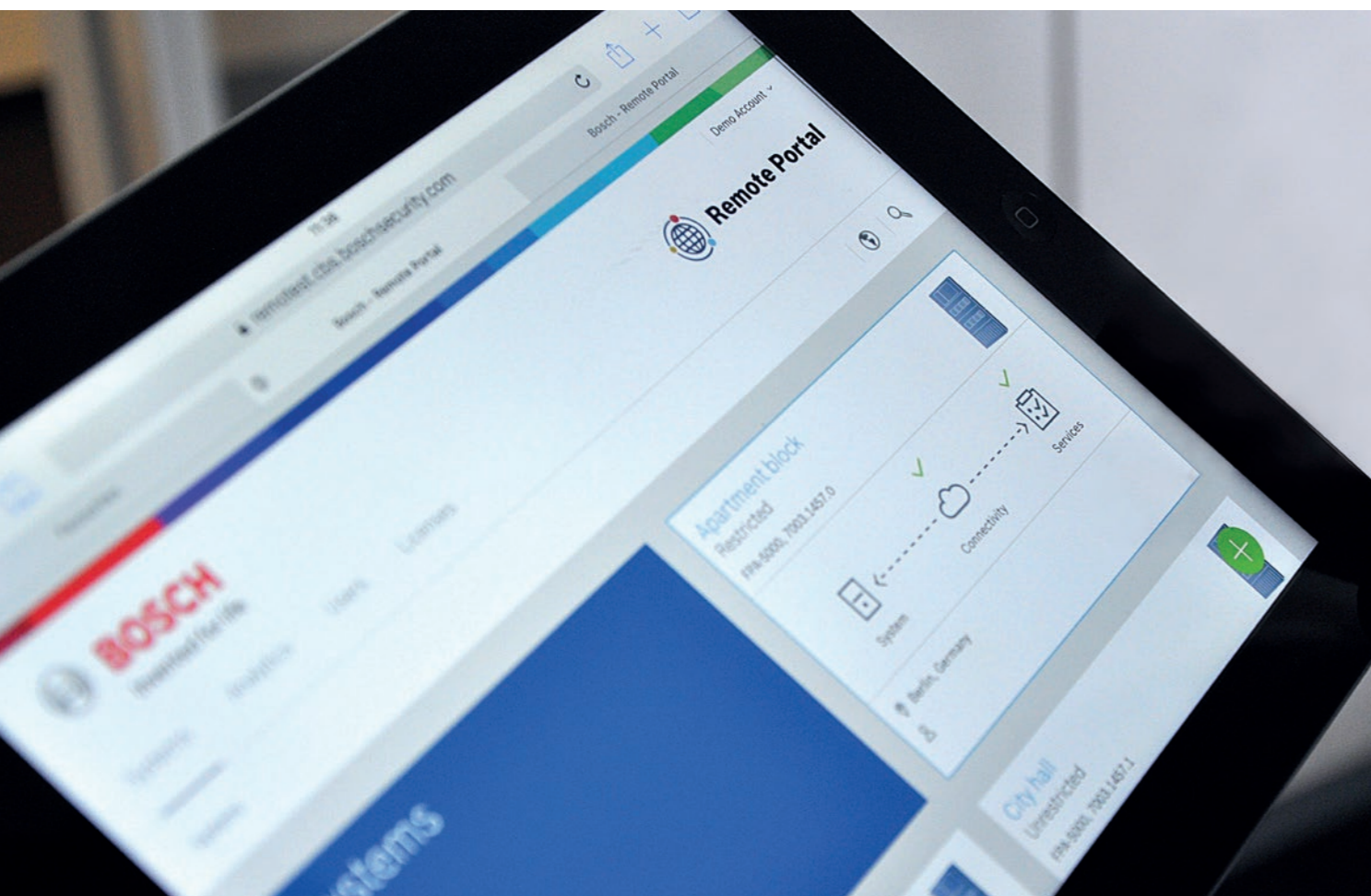
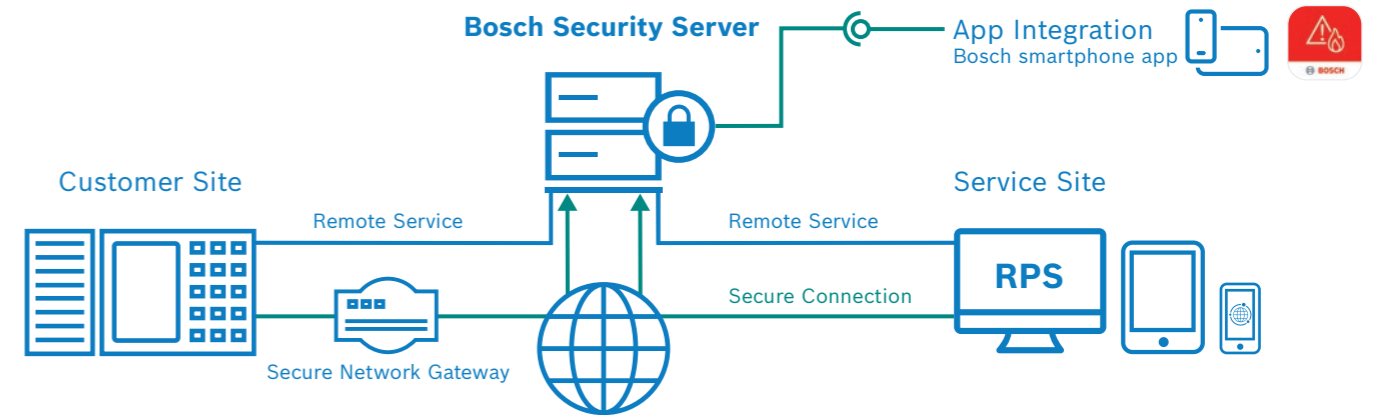
As a technical novelty, the eMatrix graphical user interface (GUI) offers full control via a 7-inch screen. The intuitive interface provides a clear status overview of connected fire protection equipment and evacuation zones. eMatrix also controls voice alarm, door control as well as HVAC (heating, ventilation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

# 03 Intelligent service that's always available



Innovative technology from Bosch allows system integrators to provide seamless remote support and enhanced performance. Bosch Remote Services are a secure, efficient way to monitor, maintain and service fire detection equipment remotely as well as to interact via a mobile application.

## Remote Services



**Remote Connect**  
The secure and protected connection to the panel via internet optimized for use with FSP-5000-RPS configuration software. It facilitates 24/7 remote access to support troubleshooting whenever and wherever necessary. Specialized technicians can now support the site remotely optimizing efficiency and staff allocation.



**Remote Alert**  
To solve service queries preemptively and faster than ever before, integrators, business owners and technicians can receive immediate SMS and email notifications on alarms and faults directly from their installed systems. The powerful user management on the Remote Portal ensures that relevant notifications reach the right person reliably.



**Remote Maintenance**  
Real-time fire system data can be analyzed on the Bosch Remote Portal to assess replacement efforts and investigate trouble sources before reaching the customer site. On site, the integrated walk test feature supports and simplifies system maintenance with its intuitive tablet and mobile computer interface. Store comprehensive documentation of maintenance activities with one click in automated reports to save valuable time.

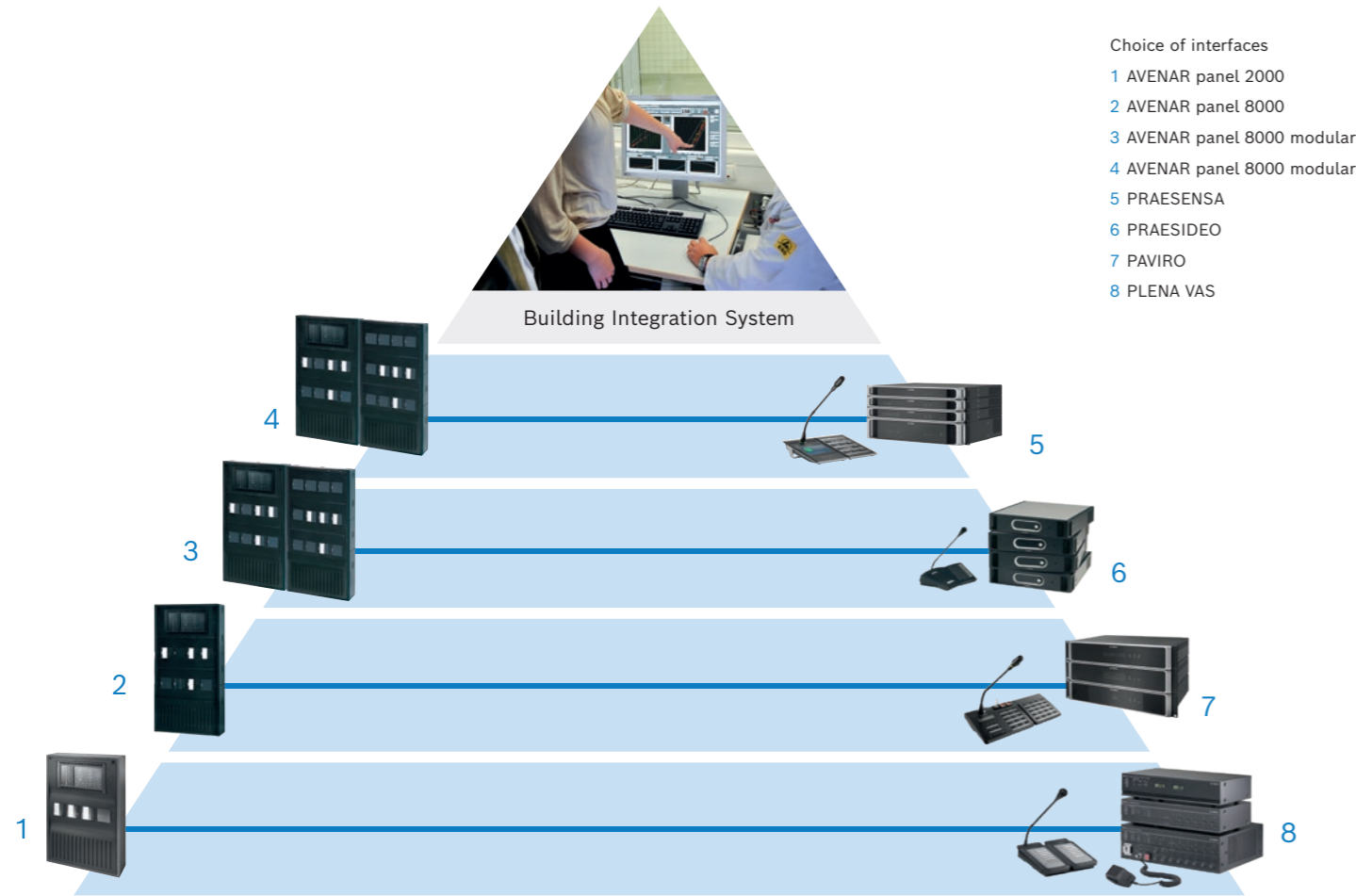


**Remote Interact**  
This service enables the connection of Bosch mobile applications for safety managers, integrators and business owners offers instant push notifications for iOS and Android. It offers prompt information in case of fire alarms or system warnings. The secure connection via cloud infrastructure guarantees best in class cyber security measures.

> 25% more efficient

# 04 Sound performance that's easy to expand

## Functional interaction



### Advanced voice evacuation

Bosch provides everything required for an advanced voice alarm system. Voice messages have excellent speech intelligibility, and signals are clear and easy to understand. The system can route pre-recorded messages and signals, and can provide background music and commercial announcements during everyday operation. Permanent supervision of system functions and loudspeaker lines adds extra reliability. PLENA voice alarm system supports smaller applications; PAVIRO is perfect for mid-sized tasks, while PRAESIDEO and PRAESENSA are a leading choice for larger venues.

### Bringing it all together

The system designs allows for expandability, and all the devices and peripherals work seamlessly together. In smaller applications, the PLENA voice alarm system interfaces with AVENAR panel 2000. For larger-scale applications, an intelligent IP interface connects our AVENAR panel with PAVIRO and PRAESIDEO voice alarm and public address systems. The eMatrix graphical user interface (GUI) of AVENAR panel 2000 and 8000 offers full control via a 7-inch screen. The intuitive interface provides a clear status overview of connected fire protection equipment and evacuation zones. All of these systems connect to a superior building management system via OPC or using a software development kit (SDK).

# Fire alarm and voice evacuation with Smart Safety Link

## Interfaced integration

### Story Casa Sollievo bimbi Italy – Associazione Vidas

Founded in 1982, the Associazione Vidas has been providing free-of-charge social and health services for patients suffering from incurable diseases at home and the Casa Vidas hospice. In 2019 as the first pediatric hospice in Lombardy, Casa Sollievo Bimbi opened and now serves young patients and their families as a ‘green’-certified, six-story building with comprehensive support on a total area of 6,400 square meters.

Ensuring the safety of patients was a priority from day one. The Associazione Vidas was looking for a single supplier with experience in equipping medical buildings to provide a centrally controlled, integrated solution for the institution. With integration and end-to-end security as the primary focus, the system relies on IP-based components and network architecture. Solutions include the Modular Fire Panel 5000 Series connected to 1,200 digital detectors for real-time fire alarm throughout the building. Combined with the PRAESIDEO Digital Public Address and Voice Alarm System, certified by security standards such as EN 54-16 and ISO 7240-16, the solution enables a new level of emergency response.

The connection between fire and voice alarm systems at Casa Sollievo Bimbi is created by the Smart Safety Link from Bosch. First, the IP-networked fire detectors in the building automatically pinpoint the exact location (floor, room, area) of a fire to emergency responders for a heightened sense of situational awareness.



Second, the system broadcasts voice announcements with clear evacuation instructions, which studies have proven to deliver time gains up to 30 percent for emergency response teams compared to a non-voice alarm signal. And third, the Smart Safety Link allows for a ‘phased’ evacuation of the building by different zones. Starting with addressing building occupants closest to the threat creates a highly efficient emergency response that avoids panic and directs people to safety via the shortest, safest escape routes.

To optimally prepare for emergencies, clinical staff can pre-record specific emergency evacuation plans on the PRAESIDEO Digital Public Address and Voice Alarm System. So in case of a threat, staff is free to help patients instead of spending valuable time on live announcements.

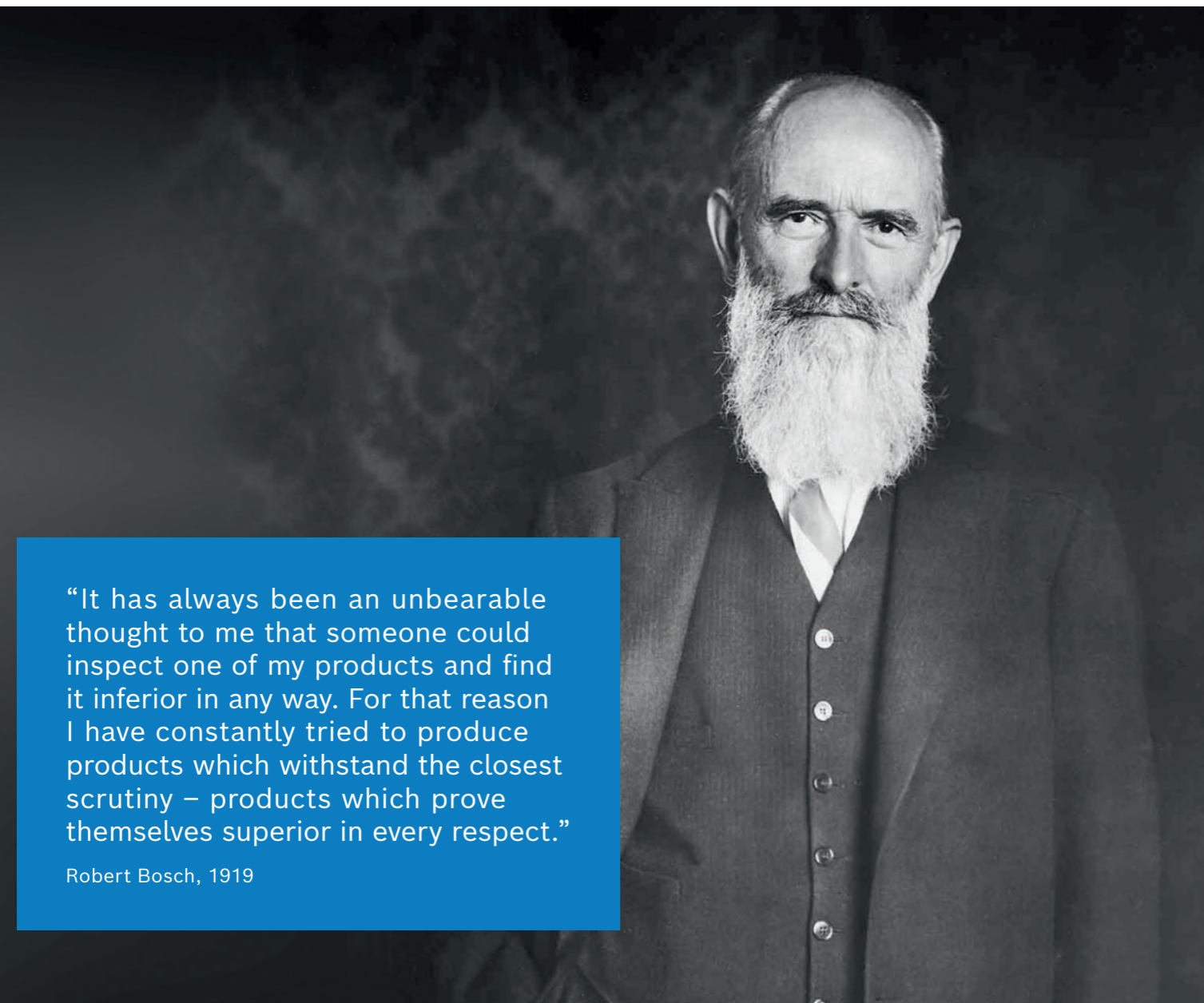
“The collaboration with Bosch has been valuable, effective and efficient.”

Giorgio Troisi, General Secretary of the Associazione Vidas

## 05 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

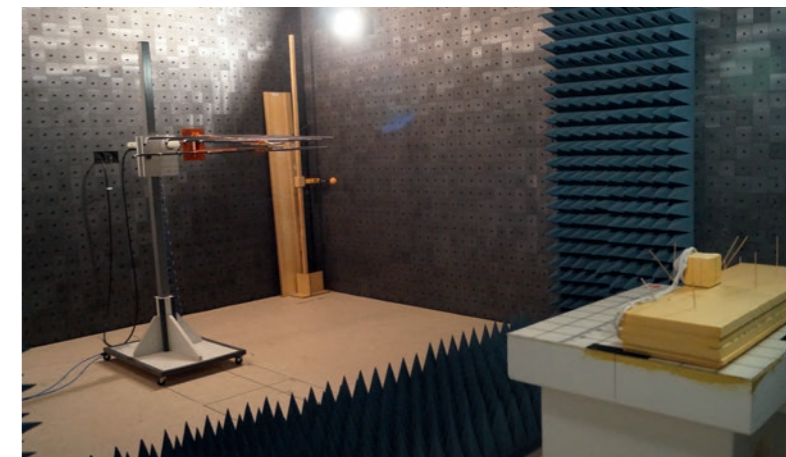
The disturbance tests are slightly different in order to see, if the video-based fire detection AVIOTEC detects fire and smoke correctly. Direct spotlights shine into the camera and ventilators blow smoke in all directions. Photo canvases have been used to see if AVIOTEC can detect fires correctly even 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.

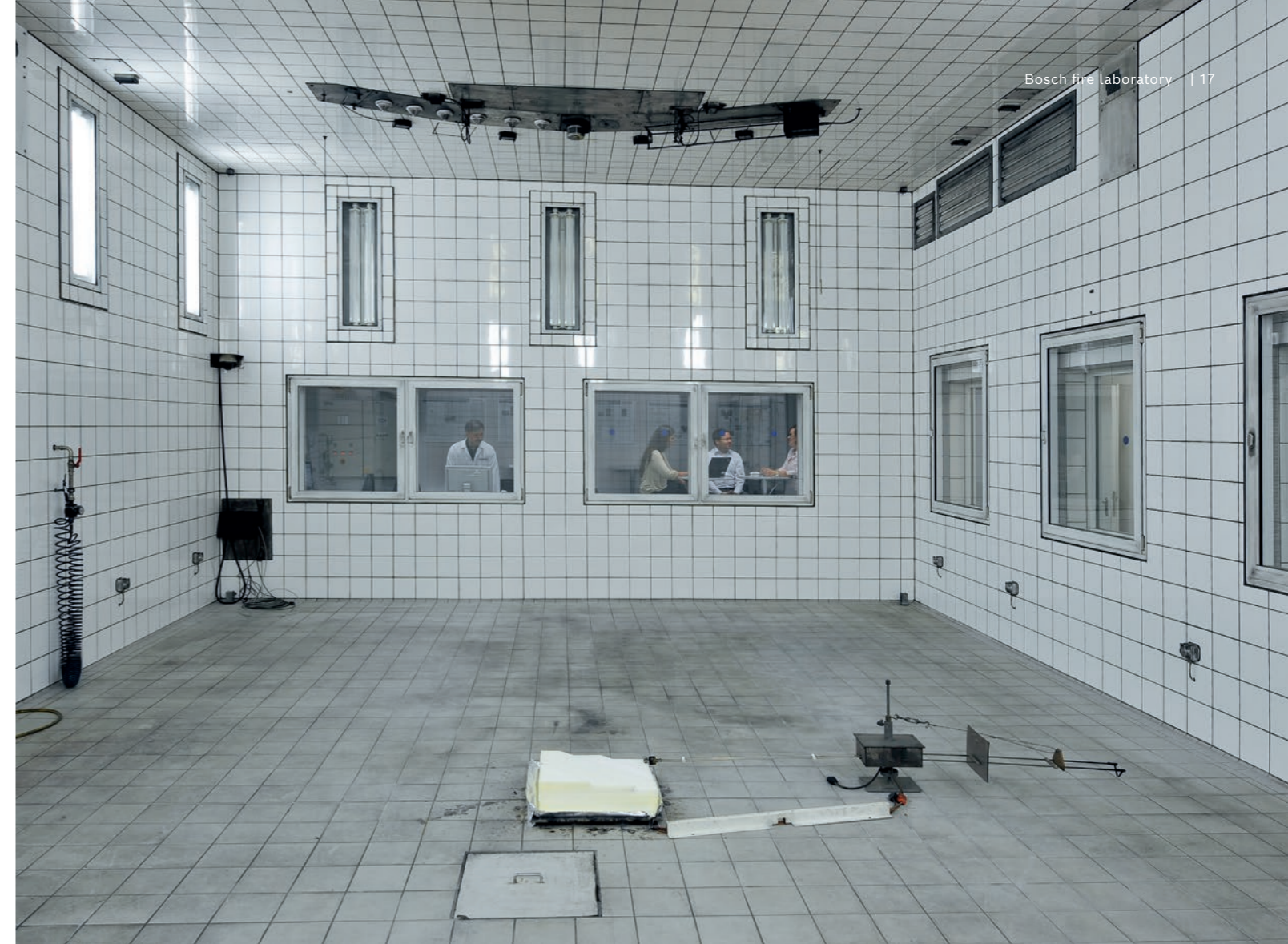
On the screen in front of him, Rett observes when and how the fire detectors mounted on the ceiling of the fire laboratory are triggered. This test, known as Fire Test 4, is one of the standard tests that all fire detection products made by Bosch must undergo. It is standard because it is one of many 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 this kind of especially 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."



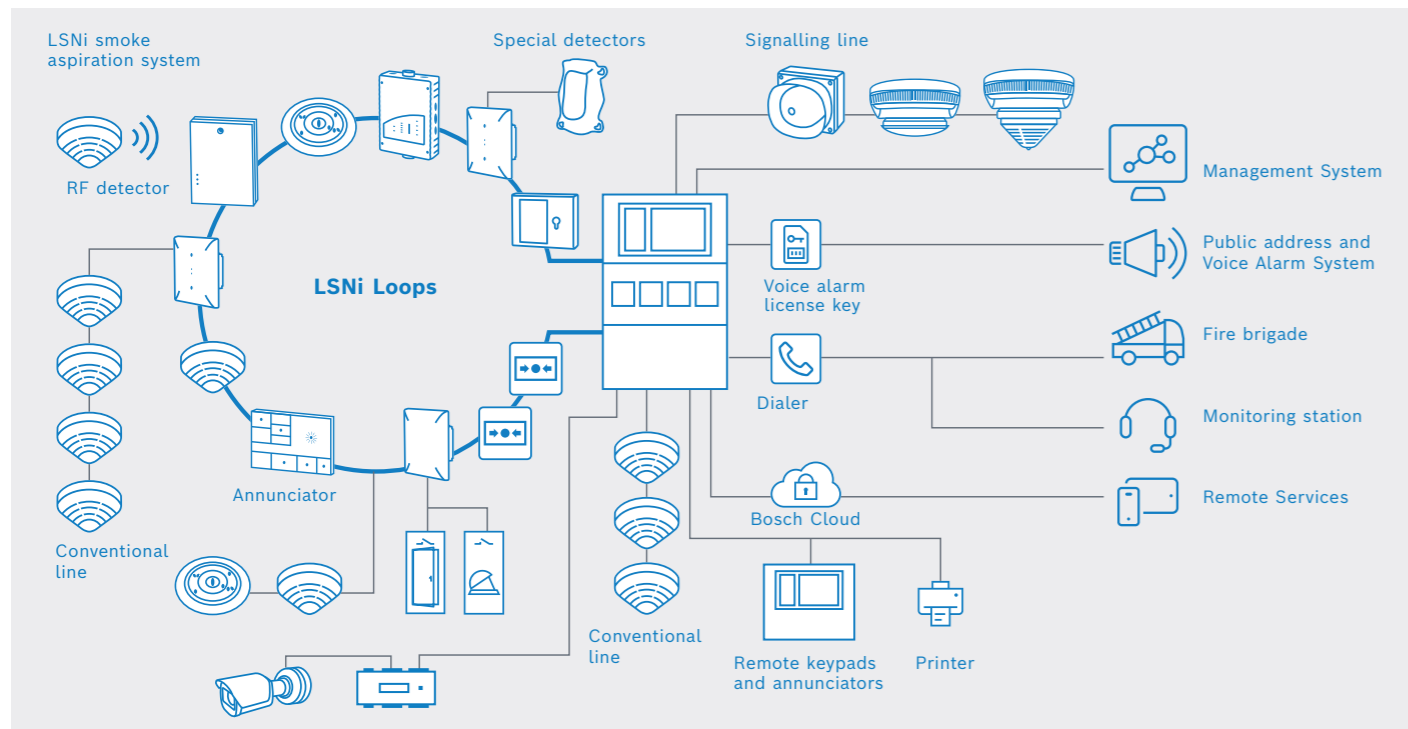
Get more info  
about our quality  
and testing

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

Input, output or combined high- and low-voltage relays for the controlled activation of a group of signaling devices and for the connection of conventional peripherals: The interface modules in the 420 Series have been specifically developed for connecting to the LocalSecurityNetwork improved version, which will help you optimize your fire detection scenario.



### 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.



### 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.



### 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.

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.



# 06 Product overview 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

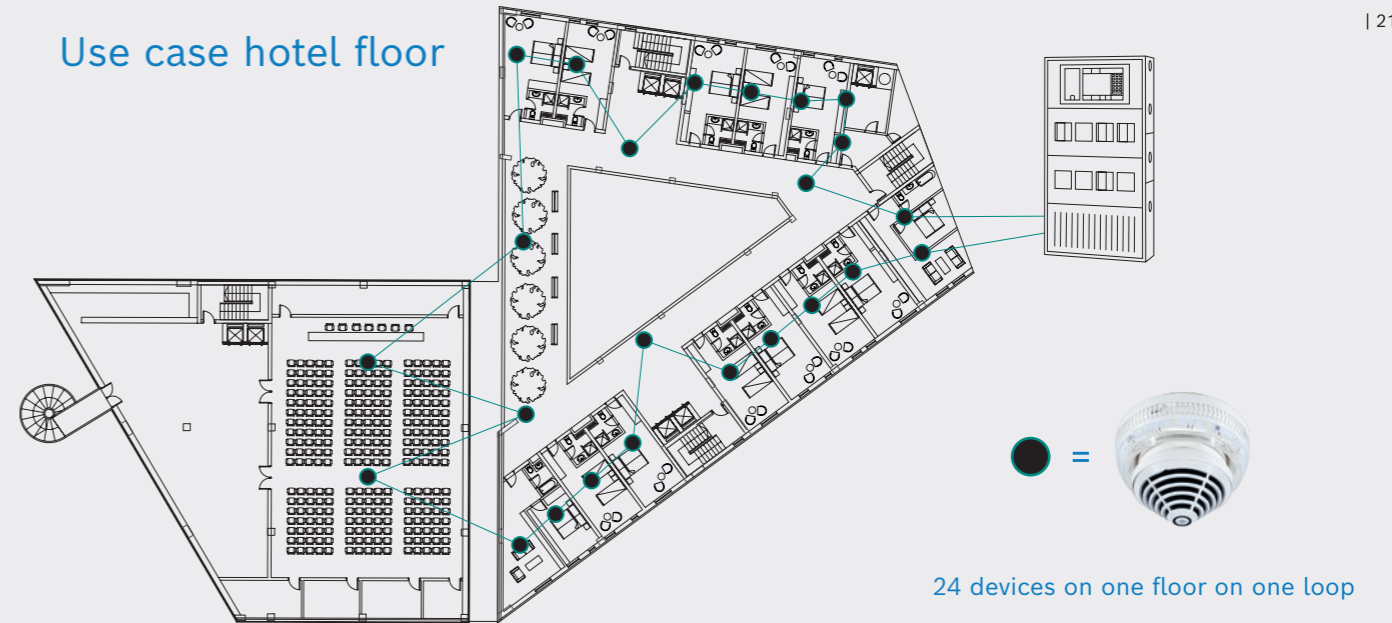
### Up to 125 devices on a ring bus

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



24 devices on one floor on one loop

### 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.

## 07 See it before it spreads

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

For additional safety and security even when conditions are not ideal, sometimes you need more than one pair of eyes. The latest technology ensures early detection for all kind of light situations.

**Faster and more accurate:**

Bosch's video-based fire detection system represents the next generation in threat-detection capabilities. Utilizing a unique, scientifically tested physical detection model, Bosch technology spots fires and disturbances, predicts behavior to reduce false alarms and speeds up reaction times – helping you stop threats before they spread. AVIOTEC is VdS- and CSIRO-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.

Improving the rescue chain through fast detection and situational awareness protects lives and minimizes damage.



#### Did you know that...

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



Reference Mouka – Nigeria Manufacturer Mouka Ltd. – Fire and smoke detection in seconds raises safety of hundreds of employees



Outdoor fire detection close to buildings where almost no other detection technology is available with artificial intelligence based algorithms reducing unwanted alarms

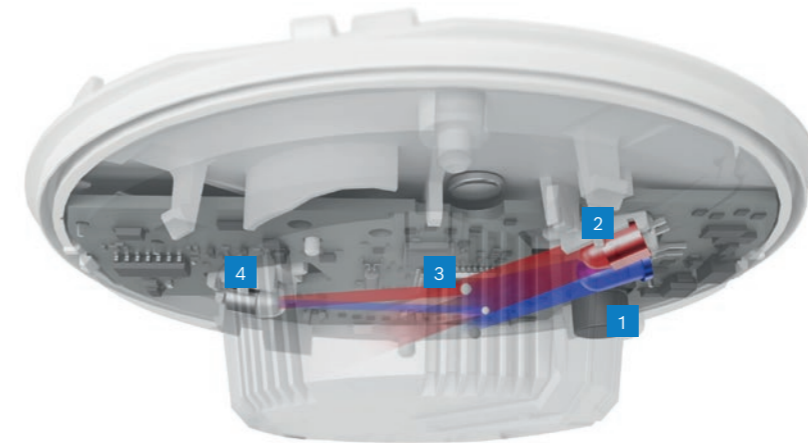
- #### At a glance
- **Detection of flames and smoke**  
Identify even hidden fires, smoldering fires and burning liquids
  - **Fast detection at the source**  
Detect fires where they start, speeding up reaction times, improving rescue response and minimizing damage at the site
  - **0 lux detection**  
Optimize surveillance together with IR illumination
  - **Outdoor applications close to buildings**  
Ensure dependable operation via innovative AI-algorithms
  - **Live streaming**  
Monitor environments in real time and speed up rescue response times
  - **Video storage**  
Perform root-cause analysis with recorded videos



Read the whole story about Mouka Mattresses

# 08 Intelligent detection for superior protection

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



**Dual Ray Technology**  
Detectors equipped with Dual Ray Technology are precise enough to detect the smallest visible disturbance values, such as steam or smoke, resulting in fewer false alarms.

- 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?



**Early detection even in most challenging conditions**

In the world of fire detection, precision and reliability are essential. AVENAR detectors 4000 series offer eight automatic fire detectors with different kinds 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.

**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.

# 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

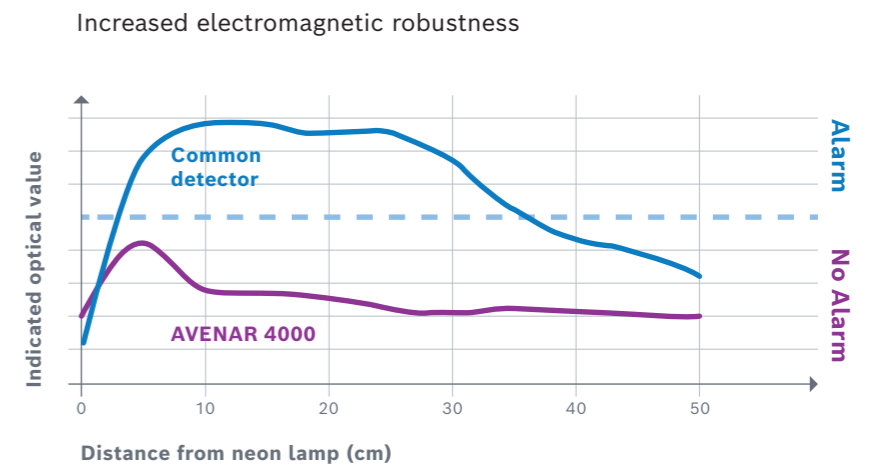
With its eSmog feature, AVENAR detector 4000 takes these new circumstances into account. Its robustness against electromagnetic pollution and its information about invisible disturbance values, such as escalators, mobile phones and routers, allow the system integrator to identify and resolve critical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



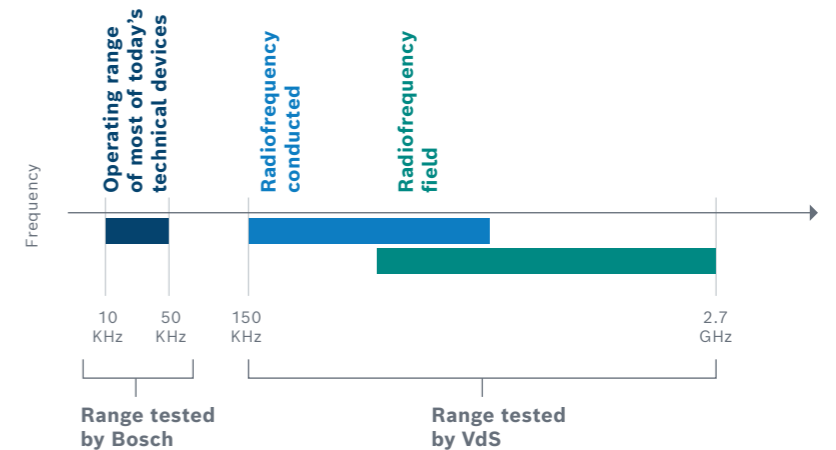
## Did you know that...

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



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.

## 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 has style built in. Inside it is packed full of proven know-how from Bosch. And that is something you can rely on. The unique technological approach ensures that you have made the right investment for the future.

### Award collection – not dust collection

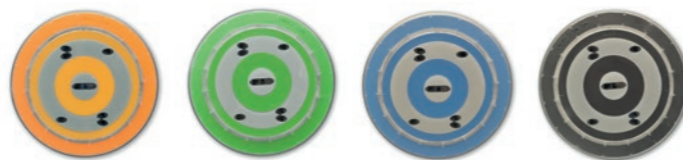
The fact that there is a virtual optical chamber inside the Smoke Detector 500 Series means that it does not stick out of the ceiling. The smooth surface does not gather the usual visible dirt in rooms with high dust build-up. So it offers high reliability and it is easy to clean. On top of that, it saves service time and costs. The level of dirt build-up is continuously measured. A trouble signal indicates when a unit needs to be cleaned.

### Powerful technology

The 500 Series is a scattered-light fire detection system with a dual detection area. Because the sensors monitor two independent light areas in open space, the detector is extremely reliable. The invisible detector is also available as a multi-sensor detector with a carbon monoxide (CO) gas sensor. This combination of scattered-light sensor and CO gas sensor allows alarms to be evaluated using intelligent signal processing methods. This greatly decreases the likelihood of false alarms and increases the number of possible applications since this detector even works well in environments that are unsuitable for standard photoelectric detectors.

### Giving architects more freedom

The low mounting profile of the 500 Series makes it invisible on any ceiling. The unique mounting method blends in easily with decor, allowing architects to focus even more on design and the general appearance.



### 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.

## 10 Monitored planning: Transparent and close to reality

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

### 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. Hence, we offer a solution that is 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 newest 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, fitted precisely 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.



## B21-storey skyscraper is kept safe and secure, combining fire alarm-, voice evacuation-, access control- and video systems

The Central Point skyscraper in Warsaw, atop a metro station junction, is a 21-storey structure primarily for premium offices. Spanning 19,100 m<sup>2</sup>, it required advanced fire safety, public address, voice evacuation, access control, and video security solutions. With partial occupancy, the design prioritized scalability and flexibility in unit layouts, adopting a 'white box' concept for tenant customization.

The safety and security systems were strategically deployed for adaptability while meeting regulations. Bosch integrated all elements into a unified solution, managing fire safety, public address, evacuation, access control, and video security. AVENAR fire panels oversee detectors and interface with safety systems, providing tenants freedom in office space use and floor plan customization.

“Central Point was looking for a reliable fire safety system with maximum flexibility for their tenants in designing their office space. Thanks to the technical capabilities of Bosch point type detectors, building managers can rest easy with a flexible, proven fire alarm system with minimal false positives.”

says Krzysztof Kostecki, Country Cluster Manager at Bosch Building Technologies

## Reliable fire detection solutions ensure business continuity for the pharma industry in India

Lupin Limited, a major global pharmaceutical company headquartered in Mumbai, faced challenges in maintaining reliable fire detection solutions at its production plant in Ankleshwar, Gujarat. Despite having 11 manufacturing facilities compliant with cGMP standards, the accumulation of excess dust triggered frequent false alarms, impacting business continuity. Mr. Jha, the EHS Head, sought a more reliable solution to ensure the safety of the workforce and prevent interruptions in plant operations. The company, known for its research and production in various medical areas, needed a robust fire detection system to address these challenges and uphold its commitment to worker safety and international standards.

“Our new fire detection system relieves our stress levels as we no longer experience excessive false alarms at work.”

End-user, Operations Team, Lupin Limited Ankleshwar plant



## Retrofitting and remote technology provide rapid, reliable fire safety for a city hospital in Brazil

Hospital Centro Médico Campinas, a prestigious healthcare facility in Brazil, has undergone a major fire safety upgrade. Founded in 1973, the hospital faced challenges due to its extensive infrastructure and multiple fire alarm control panels that operated independently of each other. To overcome inefficiencies and ensure a rapid response to fire incidents, a unified, networked fire control system was implemented. This included replacing outdated panels, optimizing detection devices and integrating a compatible system throughout the complex. The modernisation efforts, including remote monitoring technology, now provide a cohesive and reliable fire protection solution for the hospital, in line with its commitment to patient care and business continuity.



# 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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