

ENERGY AND BUILDING

SOLUTIONS

2024

A Magazine About Security, Comfort and Efficiency in Commercial Buildings



**Hoog Catharijne:
Fire protection in
grand style**

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**Sustainable cheese
thanks to smart
building automation**

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Invented for life



BOSCH



Dear readers,

With our intelligent solutions and digital services, we provide you with decisive answers to questions regarding hot topics such as climate change, safety, urbanization, digitalization and artificial intelligence. To achieve this, we are thinking not just one, but five steps ahead, building bridges to new innovative technologies and making the seemingly impossible possible. Thanks to your confidence in our technical solutions and our service expertise, we are now one of the leading system integrators for building technology in the world.

We will continue our path for growth, with combined forces and a new organizational structure: In the future, our entire business division, in addition to the product business for fire alarm systems, will focus on consulting, planning, implementation and operation of integrated and multi-functional solutions in the areas of security and life safety, building automation and energy efficiency, as well as on digital services.

What this means for you: In the future, you will have an even stronger partner with an outstanding team of around 8,000 employees in eight countries, implementing building solutions for a better life, brand-independent and at the high quality level you're accustomed to.

I wish you an enjoyable read!

THOMAS QUANTE
CEO Bosch Building Technologies



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ABOUT THE COVER
Hoog Catharijne is one of the largest shopping centers in the Netherlands. Versatile fire protection solutions from the Hacusto Protec team at Bosch ensure safe operation.

World Heritage Site meets artificial intelligence

A new fire protection and safety solution sets an example: Together with the engineering firm plan Ing, Bosch has developed and implemented an intelligent video solution for the cathedral site office – one that provides comprehensive protection for the World Heritage Site and helps preserve it.

The Aachen Cathedral with its 1,200-year-long architectural history is a true masterpiece. It is regarded as the epitome of Carolingian architecture and assumes an important role in the architectural history of Europe. In 1978, the Aachen Palatine Chapel became the first building in Germany to be added to the list of UNESCO World Heritage Sites. The 31-meter-tall building is crowned by a dome. Here, one million visitors flock every year to attend services or marvel at its octagonal central structure and choir hall, as well as the side chapels. What is the best way to protect a structure like this?

As part of the modernization of the electrical installations, the issue of fire protection was completely rethought, and new challenges in the areas of burglary protection and vandalism were solved. More than 50 cameras were installed by Bosch experts in 16 rooms in Aachen Cathedral, forming an ingenious video surveillance system. The IP cameras with an integrated video analysis function detect flames and smoke visually right where they first develop, allowing fires to be identified quickly. However, the AI-supported video solution can do even more: It is used at night to raise the alarm in the event of break-ins. During official opening hours, the system helps protect the valuable works of art and relics in the cathedral from vandalism by issuing an alert when the virtual restricted zones surrounding the exhibits are breached. Special software with statistical functions analyzes the flows of visitors and informs the cathedral verger by smartphone as soon as the maximum number of visitors to the cathedral has been reached, so that further precautions can be taken.

With this intelligent solution, Bosch Energy and Building Solutions makes an important contribution to the preservation and protection of Aachen Cathedral, which takes on a pioneering role in the use of intelligent technology to ensure special protection of World Heritage Sites. ●



More insight
into the solution at
Aachen Cathedral



NEXOSPACE-MARKETPLACE

IoT services and solutions for smart buildings

With NEXOSPACE, Bosch offers a digital service suite for efficient and sustainable building management. Together with partners, the NEXOSPACE Marketplace now also offers innovative IoT services and apps that increase user comfort or optimize building operation. For example, this includes Workplace Analytics. This service supports operators and real estate managers in analyzing the actual use of premises based on real occupancy data. An average workstation in Germany costs around EUR 250 per month, whereby the occupancy of office space depends heavily on the respective industry and is sometimes only 60 percent. Workplace Analytics helps companies create transparency in order to make optimum use of premises and thus reduce costs. Another service enables the software-based reservation or booking of workstations, so that spatial resources can be used more efficiently. An app gives employees a quick, easy overview of available workstations and allows them to reliably plan their office day.

GUT ABTSHOF EQUESTRIAN CENTER

Innovative protection for people, horses, and buildings

The Gut Abtshof riding complex in Mönchengladbach is a dream come true for horses, riders, and the operators. Until the 19th century, the abbots of the Benedictine Gladbach Abbey resided on the property, and over 60 livery horses are kept here today. The traditional estate in Mönchengladbach is not only one of the most modern, but also one of the safest riding complexes today. A networked video solution with around 40 cameras combines intrusion and perimeter protection in the buildings as well as in the extensive outdoor area, and features a special intelligent early fire detection system in the stable aisles. This will also make it possible to broadcast live streams during horse shows. The operators have virtual access to the cameras via a remote portal with an interactive site plan, which even shows movements. The Bosch service team can carry out maintenance and firmware updates remotely via the cloud service.

Find out more about the solution



Strong growth in North America

Climatec, a Bosch company with more than 1,000 employees, is one of the largest private solution providers in the fields of energy efficiency, building automation and building security. Bosch continued this success by making two further acquisitions in 2023.

The demand for safe, efficient and comfortable commercial buildings is constantly on the rise. Since Climatec LLC became part of the Bosch family, the company has experienced strong growth, particularly in the North American market, with solutions in the fields of building automation, building security and energy services. Its main driving force is the modernization of commercial buildings in terms of energy efficiency and security. The acquisition of Paladin Technologies and West Coast Fire & Integration Inc. gives Bosch the opportunity to expand its successful system integration business into the USA, as well as enter into the Canadian market.

With 1,500 employees and 35 locations in Canada and the United States, Paladin Technologies is a leading provider of security solutions and system integration services. In addition to video surveillance, access control and intrusion detection systems, its portfolio also includes network infrastructure, monitoring and state-of-the-art audio-visual solutions based on the best technologies available from product partners. For example, the company has implemented a new security solution for the Canby School District in Oregon, USA. This includes systems for access control, IP voice alarms and intrusion detection in nine buildings as well as a district office. For Canada's largest electrical retailer, the Paladin team in Montreal implemented a state-of-the-art video surveillance, access control and intrusion detection solution covering over 16,000 square meters. West Coast Fire & Integration offers ready-to-use security solutions and augments Climatec's previous operations in California. The company serves customers in the healthcare and education sectors, office buildings and the hospitality industry. ●



Fire protection in grand style

The Hacousto Protec team of Bosch Energy and Building Solutions in the Netherlands ensures topnotch fire protection in the Hoog Catharijne shopping mall in Utrecht, thus providing greater safety for more than 30 million annual visitors.

Filled with hundreds of stores, offices, and restaurants as well as hotels and parking garages, in addition to serving as an event venue, the Hoog Catharijne shopping center in downtown Utrecht is one of the largest in the Netherlands. It spans more than 100,000 square meters of retail floorspace and welcomes more than 30 million visitors a year. This megamall is a bustling metropolis in its own right, making appropriate security and safety measures an absolute must – and especially fire protection.


The team of Hacousto Protec joined Bosch Energy and Building Solutions in the Netherlands in 2021, but it has been responsible for fire protection at Hoog Catharijne since 2008. Over the years the team of Hacousto Protec has implemented a complete, comprehensive solution spanning 60 fire alarm control panels that are networked with smoke and fire detectors and evacuation systems. The solution was intelligently designed and implemented from the start in such a way that it could be flexibly modified and extended as the shopping center grew and evolved. “The individual areas and shops are constantly being changed and redesigned,” explains manager sales Enrico Zonneveld of Hacousto Protec, who is in charge of the project. “So it’s important to be able to quickly adapt the fire alarm solution to their changing requirements. Over the years, the networked fire alarm solution has not only grown with the shopping center but also increased in complexity.”

All this has happened while complying with strict legal requirements.

A case in point: Dutch regulations require buildings spanning more than 10,000 square meters to be equipped with a fire alarm system with full surveillance according to NEN2535 regulations, and a voice-alarm evacuation system according to NEN2575. This is the case in all of the central areas of Hoog Catharijne, and appropriate steps were therefore taken. Almost all of the businesses in the mall are connected to a centrally controlled and monitored fire alarm and evacuation system. Among other things, this makes it straightforward to identify and swiftly fix faults in individual components or system elements.

Overall it is a huge project: “This is one of the largest building complexes in which Hacousto Protec has implemented solutions to date,” according to Zonneveld. Those in charge at Hoog Catharijne are so satisfied that the collaboration is being extended in scope. A dedicated team member is on-site 5 days a week for control and maintenance.

Currently a fiber-optic network is being installed at Hoog Catharijne while all of the fire alarm panels are being upgraded once again and linked to it. Hoog Catharijne and Bosch Energy and Building Solutions’ Hacousto Protec team have built a strong history together, standing the partnership in good stead for the future. ●



„It’s important to be able to quickly adapt the fire alarm solution to their changing requirements.“

ENRICO ZONNEVELD,
MANAGER, SALES,
HACOUSTO PROTEC-SOLUTIONS

Marco KrauseProject Manager for
Building Automation

CUSTOM TAILOR

He has an eye on the big picture, pulls the strings, and lends a hand when it is required: Marco and his team do everything they can to ensure that the building automation solution is implemented at the customer's premises exactly as planned and completely fulfills its purpose: Increasing energy efficiency and creating a pleasant indoor climate. As a family man, Marco thinks it is great to make a contribution with his work at Bosch Energy and Building Solutions, so that future generations will have as intact an environment as possible. For him, building automation is an important future-oriented field in which many innovations can still be expected.



Building together

At Bosch Energy and Building Solutions, around 6,000 dedicated employees – from young talent to experienced professionals – develop, implement and operate state-of-the-art building solutions for you with the highest level of customer focus and professional expertise.

Anna-Lena Kniebel

Junior Consultant

BRIDGE BUILDER

Anna-Lena advises industrial customers on their path to climate neutrality. She is always impressed by the customers' motivation to take responsibility for climate protection. For Anna-Lena, one thing is clear: Sustainability is a team sport. And: Teamwork makes the dream work! Everyone at Bosch Climate Solutions brings different, individual skills to the table and together these cover a wide range of specialist areas. A perfect match for customers – and for our environment.



Oliver Winter
Head of Service and
Portfolio Management for
the Security Division

EN AB LER

Sometimes it just needs that finishing touch to raise a solution or service to the next level. Oliver and his team of experts at Bosch Energy and Building Solutions take a fresh, creative approach to the search and immerse themselves in the customer's world. Progress and innovation do not always mean having to start from scratch. Even a new digital feature can improve usage, and a small process change solves a customer's challenge – and can be that decisive finishing touch.




Michelle Luppino
Sales manager for the
construction industry

PIO NEER

Michelle has been fascinated by the topic of sustainability since she was at school. At Climatec, the Bosch subsidiary in the USA, she and her team of six advise customers on the topic and implement building automation solutions. These primarily control heating, ventilation, air conditioning and lighting and can significantly reduce the energy consumption of buildings. Building automation lets people feel comfortable, because it ensures a pleasant indoor climate. For Michelle, this is a key motivation, along with the topic of energy conservation: With her work she can contribute to people's comfort and protect the climate at the same time.

 **Building
together**

Get to know our team: 

PALACE OF WESTMINSTER

Emblematic: comprehensive security solutions for the British Houses of Parliament

For any British company, it's an honor to be involved in a project for the Palace of Westminster (commonly known as the Houses of Parliament). Protec Fire and Security Group (Protec UK), a Bosch company, has completed a project to update the fire and voice alarm systems at this UNESCO World Heritage Site, parts of which date back more than 900 years. And the company's services continue to be in demand.

The Palace of Westminster is regarded as the cradle of democracy. It was completely rebuilt in 1860 after being destroyed by a fire and now has the status of a UNESCO World Heritage Site. The British Parliament convene here, and it is also home to the Elizabeth Tower (commonly known as Big Ben). The team of the Protec Fire and Security Group (Protec UK) was selected to upgrade the fire detection and

alarm systems of this sprawling 112 square kilometer complex in the heart of London. The British system integrator joined the Bosch family in 2021.

Protec UK planned and installed a state-of-the-art fire detection and voice alarm solution, spanning Victoria Tower, Elizabeth Tower ("Big Ben"), and Westminster Hall. The audio evacuation system comprises a network of 20 voice alarm

cabinets. For comprehensive fire protection, Protec UK's experts commissioned 12,000 fire detectors through the estate. A glance at the details reveals the importance of this kind of support: around 14,000 people work in the palace, and 7,000 tourists also visit daily. The building itself is 300 meters long, comprising more than 1,100 rooms that are interlinked by over 100 staircases and kilometers of corridors. The Palace of Westminster has the status of a World Heritage Site and its parts date back to different eras. The life safety systems therefore needed to be inconspicuously integrated in the historic building. Construction work was also kept to a minimum. After completing the last installations, Protec UK's experienced team also took on the job of maintaining the fire detection and voice alarm solution. ●

CLIMATE STRATEGY

Sustainability concept for CEMO

From a pure manufacturer of glass fiber-reinforced plastic products to a full-service provider for a wide range of industries: With four locations in Europe, CEMO GmbH has developed, over 60 years, into one of the most important companies in the field of safe storage, conveying, and dosing. Sustainability is very important to CEMO. The products are manufactured in a way that conserves resources, they have a service life of decades and they can be easily repaired and recycled. By using a biogas CHP, photovoltaics, LED lamps, and heat recovery, a saving of 350 tons of CO₂ per year has been achieved so far. The consultants from Bosch Climate Solutions have helped to prepare a holistic climate strategy to achieve neutrality in Scopes 1 and 2 as well as a reduction in Scope 3. The foundations for CEMO's first sustain-



ability report were laid following a workshop, materiality analysis, definition of the mission statement, and development of the sustainability reporting structure. The practice-oriented consultants of Bosch Climate Solutions supported CEMO with a concrete action plan to achieve the goal of neutrality in Scopes 1 and 2 by 2030. CEMO particularly appreciated cooperation on an equal footing and the pragmatic approach to implementation on the part of the consultants. Many people can draw nice pictures, but DOING instead of drawing was the motto in this case."

Read the interview with CEMO here:



COVIVIO

Smart building: Digitalization concept with a wow effect



Intelligent, sustainable, and user-oriented: Covivio, a real estate company, wants to set new standards in the field of smart buildings for a construction project at Alexanderplatz in Berlin, and is relying on Bosch's expertise in the digitalization of buildings. With a total area of approx. 59,280 square meters, the property will offer space for offices, retail, restaurants, and a daycare center alongside apartments. Together with Covivio, Bosch has developed a holistic digitalization concept with a user-centric approach, which serves as the basis for technical implementation. From keyless access and smart home applications to occupancy measurement in the bicycle cellar, the wide range of digital use cases offers real added value for the various needs of user groups from the residential, office, and retail sectors. In addition to technical innovations, the digitalization concept also takes into account Covivio's economic attractiveness and sustainability goals.

From analog to digital

Public address and voice alarm systems are an important part of an airport's security architecture. Munich Airport relies on state-of-the-art technology and an experienced Bosch team for the new solution for Terminal 1, and so moves safely and efficiently into the future.



Working in partnership: Alexander Schäffl from Bosch, Michael Huck from Flughafen München GmbH (Munich Airport), and Florian Halsner from Bosch (from left to right)



The Praesensa system can be operated flexibly and quickly via a web interface.



There is a lot going on at Munich Airport. With 31.6 million passengers in 2022 and 210 destinations in 63 countries, Munich Airport is one of the most important aviation hubs in Europe. In 2023, it was named Best Airport in Central Europe by Skytrax. Bosch has been an established partner of the project since its launch in 1992 and has a team of eleven employees on site to look after the fire and intrusion detection technology, the video cameras, and the door control system. The analog public address and voice alarm system in Terminal 1 has now been replaced by a fully IP-based Praesensa system. The challenge for the airport and Bosch Energy and Building Solutions was to replace the security system without disrupting ongoing operations. "Undergoing a conversion during ongoing operations is a complex issue for us, which was carried out with a great deal of expertise and flair by everyone involved. We are delighted to have Bosch not only as an innovative technology partner but also as an experienced system integrator at our side," says Michael Huck, Project Engineer for Security Systems at Munich Airport.

WORLD'S LARGEST PRAESENSA MULTI-SUBNET SYSTEM

The installation is based on a large-scale, high-performance networking concept with several subnets, making it the largest Praesensa multi-subnet system installed worldwide to date. When deployed to its full capacity, it allows the central management of up to 3,000 Praesensa system components and 10,000 audio zones. This means that the new solution is optimally equipped for future expansions. The Praesensa multi-subnet system includes a redundancy concept that ensures uninterrupted operation in the event of a device failure. "We wanted a secure network with good redundancy" ➔



"Undergoing a conversion during ongoing operations is a complex issue for us, which was carried out with a great deal of expertise and flair by everyone involved."

MICHAEL HUCK, PROJECT ENGINEER FOR SECURITY SYSTEMS AT FLUGHAFEN MÜNCHEN GMBH

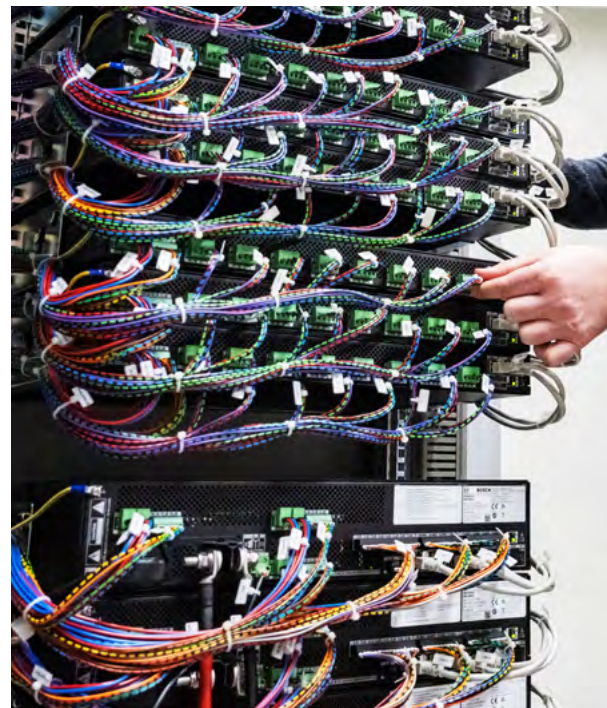
and a flexible solution that would allow Munich Airport to move securely into the future. It was also ideal that the existing 14,000 loudspeakers in the audio zones could be easily integrated into the new solution. The completed package convinced us,” says Michael Huck.

CONVENIENT OPERATION AND IMPROVED AUDIO QUALITY

The DIN EN 54-certified solution is used in Terminal 1 for passenger calls, person searches, emergency warnings, and general announcements. Integration into the airport’s existing management system means that terminal services and the fire department can reach passengers and employees quickly, in a targeted manner, and with improved audio quality. In future, prepared announcements can be triggered in 18 languages. In the event of an alarm, the fire department can use an additional panel on a 40-inch touchscreen monitor to conveniently control individual sections of the building and trigger evacuation measures such as a phased evacuation.

COST SAVINGS AND EFFICIENCY IN ONGOING OPERATIONS

In addition to the planning, the Bosch experts also installed the new system. The Praesensa systems for the 23 technical rooms in the terminal and the associated parking garages are installed in over 80 nineteen-inch central cabinets and connected to the existing loudspeakers. In contrast to traditional multi-channel amplifier systems with a fixed maximum output power per channel, the amplifiers on the Praesensa systems offer intelligent, flexible load distribution across all amplifier channels as well as reduced power consumption in idle mode. This means that fewer amplifiers are required for a large number of installations, making it possible to save up to 50 percent in space, energy, and emergency power supply capacity. The system is operated flexibly and quickly via a web interface. The customer also benefits from greater



With the Praesensa system, the available amplifier power is intelligently distributed across all amplifier channels, so that fewer amplifiers are required. This saves space and is energy-efficient.

efficiency in maintenance and service. The end-of-line modules installed at Munich Airport make it possible to precisely locate any faults in loudspeakers or cables. “This saves our service teams a lot of working time, as the source of the fault can be narrowed down to a minimum simply and easily using measurements from the central room,” says Florian Halsner, who is responsible for planning and sales in the Bosch operations team at Munich Airport.

FLEXIBLE ADAPTATION TO FUTURE REQUIREMENTS

Thanks to the complete IP networking of all components, the new solution at Terminal 1, which is also maintained by the Bosch team on site, is easily scalable and adaptable for future requirements at Munich Airport. “When you make an investment, it is important that the technology grows along with it, without wasting the previous investments,” adds Michael Huck. “This is especially true for an airport, because it is in a constant state of change.” ●



These central cabinets are the heart of the Praesensa systems at Munich Airport.



Full commitment in the Bosch operating team at Munich Airport: Florian Halsner, responsible for planning and sales, and Alexander Schäffl, system integrator.





The gas sensor with AI from Bosch is used as a digital nose in the Silvanet Wildfire sensor by Dryad

To protect our forests

Go inside, breathe in, feel good! The forest has a wonderful effect on us and is one of the most important habitats for humans and animals. However, it is under threat: Millions of hectares fall victim to forest fires every year. Technology solutions can help protect nature.

20%
of global CO₂ emissions are caused by forest fires

Germany consists of 33 percent forest. That is 11.4 million hectares with over 90 billion trees. There are as many as four billion hectares of forest worldwide, which means that 31 percent of the world's land area is forested. Therefore, no question about it: The forest is one of our most important habitats, a fascinating ecosystem with many useful, protective, and recreational functions. It provides us with wood, contributes to the protection of species, protects us from natural hazards such as avalanches and floods, and is of the utmost importance for climate protection – after all, trees reduce the greenhouse effect by binding carbon dioxide. Forests are the most important carbon reservoirs on our planet, but they themselves are severely threatened by climate change.

TWICE AS MANY TREES DESTROYED AS AROUND 20 YEARS AGO

Due to increasing heat waves and droughts, more and more forest fires are raging worldwide. Compared to the time around the year 2000, twice as much forest is now burnt every year – six million hectares. For their part, forest fires lead to emissions that further increase the greenhouse effect and make fires even more likely in a feedback effect – up to 20 percent of global CO₂ emissions are caused by forest fires. Therefore, global warming is quite literally a fire accelerator, with the most common causes of forest fires actually being arson and slash-and-burn agriculture. One thing is certain: Most forest fires are man-made, directly or indirectly, and they cause billions of euros worth of damage. Reinsurer Munich Re has calculated global losses from forest fires amounting to 69 billion US dollars for the period from 2018 to 2022.

INTELLIGENT TECHNOLOGY SOLUTIONS HELP PROTECT OUR FORESTS

In Germany, Bosch is using its expertise as a system integrator to develop a service to help improve this urgent situation. Intelligent sensor technology with self-sufficient energy sources on the ground and drone flights with live image transmission are combined in one solution, enabling verification of detected risks and live support of the emergency services. All the

In less than

60 minutes

the innovative Bosch solution can detect a forest fire

information that the control operator needs to guide the emergency services to the deployment site is made available in a portal. The solution can help to detect an emerging forest fire within the first 60 minutes, regardless of the weather conditions, and to take quick and effective countermeasures. ●

CONSISTENTLY SUSTAINABLE

Building automation solution for Allgäu Milch Käse eG ensures high energy efficiency

No high-quality cheese without intact nature: Allgäu Milch Käse eG has been producing cheese as sustainably as possible for many years, making it one of the pioneers in its sector. Building automation specialist Hörburger GmbH, which has been part of the Bosch family since 2022, is helping the cooperative to further increase its energy efficiency.

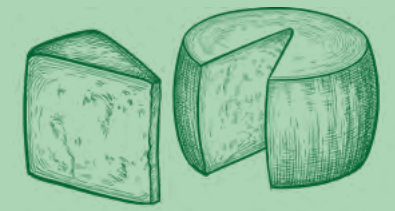
Allgäu Milch Käse eG is located in one of the most popular vacation regions in Germany. The 1,200-strong community of Kimratshofen in the Oberallgäu region has been producing high-quality cheese for over 60 years, and the cooperative has also focused on organic products since 1988. Sustainability has been practiced for decades, because an intact natural environment is the basis for success. To achieve this, Allgäu Milch Käse eG invested in technologies such as a combined heat and power plant, a photovoltaic system, and joint energy generation with a neighboring cheese factory.

The shipping and storage hall, put into operation in late fall 2023, is another major project for the cooperative. The building automation solution from Hörburger GmbH, a subsidiary of Bosch Energy and Building Solutions, plays a special role here. Since then, the waste heat, which was previously a waste product, can now be used as a valuable source of energy. With the automation solution, Hörburger GmbH, which is also based in the Allgäu region, is making a contribution to the sustainability strategy of the dairy.

CONSISTENT FOCUS ON PROTECTING THE ENVIRONMENT

Allgäu Milch Käse eG, which processes around 400 million kilos of milk per year, is represented with its Allmikäs brand in southern Germany and abroad. By investing millions, the cooperative has significantly reduced its ecological footprint. Fossil energy consumption has been reduced by around 45 percent, water consumption by 40 percent, and electricity demand by

15 percent. The construction of a new shipping and storage hall means that all stages of the value chain up to shipping can now remain in-house. The cheese is cooled, cut into small portion sizes using a new cutting system, and picked for orders – the work steps that were previously carried out by service providers. This saves on truck journeys and packaging material. ☺

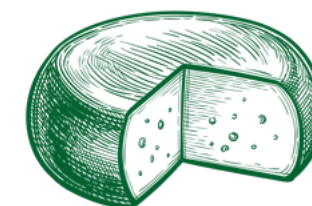


“With our solution, waste heat, for example, which would otherwise be a waste product, can now be used as a valuable source of energy.”

MARTIN HARTMANN, PROJECT MANAGER AT HÖRBURGER GMBH



Project Manager Martin Hartmann (center) hands over the control cabinet to Technical Operations Manager Andreas Sepp (left) and Production Manager Martin Reischmann (right) from Allgäu Milch Käse eG



BUILDING AUTOMATION ENSURES EFFICIENT USE OF WASTE HEAT

It was clear early on that the energy supply for the new hall should be as resource-saving as possible. This is where the building automation solution from Hörburger GmbH comes into play. It enables the efficient use of waste heat generated along the cold chain during milk processing. This waste heat is now used cost-effectively as an energy source for offices, lounges, and for heating the hall when the temperature falls below the target temperature of nine degrees Celsius. The Hörburger solution controls the ventilation systems and adjusts cooling, heating, and the use of outside air as required. The processes are regulated by a controller that records the temperature, pump statuses, valve positions, outside temperature, and other parameters.

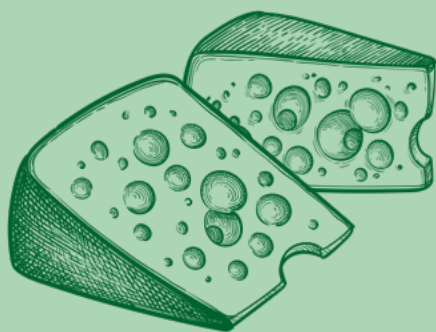


Martin Hartmann (Project Manager, Hörburger GmbH, left), Dominik Gruber (Commissioning Technician, Hörburger GmbH)

The customer sets the desired target values, and the rest is automated. In addition, the building automation solution ensures optimum networking and control of the building and system technology, and therefore resource-saving, efficient, and cost-saving operation.

The cooperative members behind Allgäu Milch Käse eG see investing in sustainability as a long-term project. "The careful use of resources is firmly anchored in our responsibility for sustainability. It is necessary and sensible to use new technologies to meet this requirement. This also includes the building automation solution for our new shipping and storage hall. These measures reduce costs, save energy, and protect the climate," says Hubert Dennenmoser, Managing Director of Allgäu Milch Käse eG. ●

Dominik Gruber, Commissioning Technician at Hörburger, verifies the correct function of individual components once again



"As a cooperative with regional roots, we want to be a role model when it comes to sustainability."

HUBERT DENNENMOSER,
MANAGING DIRECTOR
OF ALLGÄU MILCH KÄSE EG

DREILÄNDERGALERIE IN WEIL AM RHEIN

Secure shopping

Giving visitors to a shopping center a feeling of maximum security without compromising the shopping experience and privacy – this is what the experts at Bosch have achieved in the Dreiländergalerie in Weil

am Rhein, which newly opened in 2022. A comprehensive security solution that goes beyond conventional fire protection was implemented for the 25,000 square meter shopping mall in the border region of Germany, Switzerland, and France. The solution includes video surveillance, an intrusion alarm and an access control system, and mechanical locking cylinders. Despite the tight schedule, the systems were integrated in such a way that they can be expanded step by step. The cameras discreetly positioned at critical points and the intrusion alarm system minimize potential risks, so that customers, employees, and assets are ideally protected. The Bosch service team is responsible for maintenance and troubleshooting on site.



Find out more about this project:



ROBERT BOSCH PLANT IN EISENACH

Excellent energy efficiency

Efficient, more efficient, Eisenach: The innovative modernization project for sustainable energy supply with a heat pump at the Robert Bosch plant in Eisenach received the European Heat Pump Award in the Decarbonization category in autumn 2023. With around 1,800 employees, the Bosch plant is a major manufacturer of sensors and transmission control units in the region. Modernization of the previous fossil-based heating and cooling generation systems became unavoidable in the face of rising energy prices and with the clear goal of making the energy supply completely CO₂-free in the future. Based on a comprehensive assessment, the energy experts from Bosch Energy and Building Solutions have developed an innovative solution for energy modernization. At the heart of the system is a large, highly efficient heat pump. Modernization will save the



Portfolio Manager Rudolf Marevic receives the Heat Pump Award 2023.

Bosch plant 2,400 tons of CO₂ emissions per year, reduce gas consumption by 95 percent, and cut energy costs by EUR 600,000. "You could say without exaggerating that we are now pioneers in the field of energy efficiency. Generation of heating and cooling on our site is virtually CO₂-free," says a delighted Torsten Karsch, Head of Facility Management at Robert Bosch Fahrzeugelektrik Eisenach GmbH.

Next-level building management

What trends are shaping modern facility management? And how can networked solutions and digital services from building technology help operators and users create vital added value?



PREDICTIVE MAINTENANCE

Reduce maintenance costs and plan better: Data from technical components is automatically collected and evaluated using sensors. Wear or malfunctions are detected before they become critical and breakdowns can be avoided.



COMPREHENSIVE INTEGRATION

Efficient operation and better monitoring: IoT-enabled building technologies and systems can be combined in a single management system across all trades and manufacturers.

CENTRALIZED CONTROL

Simple and clear: Modern building management solutions offer central dashboards that provide an overview of a building's current status.



The increasing demands for safe, efficient, and sustainable buildings – which place greater emphasis on users' needs – have rapidly increased the range of tasks and complexity of facility management. As a result, networked solutions are coming into focus in the management of commercial real estate. This is because building technology systems supply relevant data around the clock. If this data is used intelligently, new possibilities arise that provide comprehensive support for modern facility management and are geared towards the future.

MORE THAN TRADITIONAL BUILDING MANAGEMENT

Today, responsible operators occupy themselves with optimizing buildings and infrastructures in a holistic way to ensure functionality, safety, and sustainability, to increase productivity, and to reduce operating costs. Modern facility management also includes a wide range of planning, commercial, infrastructure-related,

and technical services to ensure that properties are managed in the best possible way and that occupants are offered an optimal environment. Rental management, the planning and overseeing of investment projects, and building maintenance and management are playing an increasingly significant role. The management of energy, occupancy, and space, along with user experience optimization, are also part of the range of services. Facility management deals with emergency situations, ensures business continuity, and adds value to how companies manage operations and strategy. ☺



30%
higher energy
efficiency

through building automation

TRENDS THAT HAVE AN IMPACT

Facility management today is already influenced by important trends that will continue to play a significant role in the future.

Strategic orientation

Modern facility management is evolving from an operational role to a management function that combines strategic, commercial, and technical tasks relating to building management. It makes an important contribution to the achievement of corporate goals and will be even more closely involved in strategic issues in the future.

Digitalization, AI and data analytics

IoT and connectivity ensure that processes can be improved, accelerated, and automated. The key technology of artificial intelligence enables data-driven, intelligent AIoT solutions. Learning technologies and systems will help optimize the management of commercial buildings as well.

Resource efficiency and sustainability

Energy management, energy-efficient supply solutions and reducing CO₂ emissions are omnipresent. Those responsible must bring transparency to energy consumption, provide data for reports, and implement optimization initiatives. These will help reduce costs, meet legal obligations and increase the attractiveness of buildings.

User orientation

The satisfaction, well-being, and health of the people who spend time in these buildings are more important than ever. Modern facility management can increase a company's attractiveness as an employer and contribute to enhancing its image.



OFFER MORE SECURITY

Recognize irregularities and make predictions: Networked building security solutions offer a wide range of options for prevention and response, such as the use of artificial intelligence in video technologies to distinguish between objects and people.

COLLECT ENERGY DATA

Compare, optimize, and save: The energy consumption of processes, units, systems, devices, and meters can be automatically recorded and viewed. This creates full transparency about the consumption of floors, buildings, and locations.



DATA-BASED DECISION-MAKING

Increase efficiency and save costs: IoT and connectivity provide comprehensive data from building technology, which – evaluated intelligently – optimizes the entire building management.



IMPROVE USER EXPERIENCE

Using buildings smarter and more digitally: New, user-oriented services range from booking workstations, meeting rooms or parking spaces to mobile access solutions.



INCREASE COMFORT

Increase satisfaction and productivity: Intelligent systems automatically adapt environmental conditions such as temperature, lighting, and air quality to users' needs.



BUILDING TECHNOLOGY IN TRANSITION

Whereas in the past technical building services were operated separately, now a holistic approach is possible. Intelligent and networked solutions in the areas of building security, building automation, and energy efficiency make it possible to provide safe, efficient, and low-emission properties that offer end users a greater degree of comfort and well-being. At the same time, the effort required for manual management tasks is reduced. From greater time efficiency because operators no longer have to inspect an entire building on foot, to digital documentation that supports the FM team in their day-to-day work, to intelligent cloud services that provide insightful information on building usage – all in all, a number of individual tasks can be made easier. ●

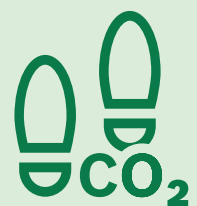
More insights
on this topic:



Optimization of an entire school district

An improved power infrastructure and more comfortable learning: Bosch subsidiary Climatec is implementing a multiyear modernization program to benefit around 16,000 students at the Rowland Unified School District in California.



 **23** schools want to reduce their carbon footprint

47.7 million dollars in savings thanks to the efficiency program

Nestled in the tranquil San Gabriel Valley east of Los Angeles, Rowland Heights – home to around 50,000 residents – is touted as “a hidden gem for families and nature enthusiasts.” Numerous parks, restaurants, cultural events, and leisure facilities attract fans of a peaceful suburban lifestyle. The prize-winning public Rowland Unified School District (RUSD) also

enjoys an excellent reputation. Besides Rowland Heights, it also serves the nearby communities of Industry, La Puente, Walnut, West Covina, and South San Jose Hills. The schools have a reputation for being particularly family-friendly and progressive. They are enthusiastically committed to innovative learning and new technologies, in addition to protecting the environment and using natural resources frugally.

Climatec, a Bosch subsidiary, has been partnering with the Rowland Unified School District (RUSD) for over a decade. The goal is to reduce the carbon footprint of its 23 public schools and provide more comfortable learning and

teaching environments for the 16,000 students and their highly motivated teachers. The overall project to boost energy efficiency comprises several phases. Important milestones have already been achieved in the areas of lighting, HVAC, building automation, and use of renewable energy sources. “No needs have been ignored,” says Alex Flores, the assistant superintendent of administrative services of the Rowland Unified School District, about the ambitious project. “We found great success with our partner, Climatec, who helped our staff develop a holistic approach that’s unique to the needs of both our campuses and students.”

Interior LED lighting has been implemented district-wide, in addition to replacing antiquated heating and cooling systems with innovative new technology across all of the schools and installing state-of-the-art, energy efficient air conditioning systems in the multi-purpose and gym facilities. Parents, students, faculty, and other personnel had all been very keen

for these things to be done, due to the intense summertime heat in the San Gabriel Valley. Solar shading is now also helping to make teaching and learning more pleasant throughout the school district – optimal outdoor study and eating areas have been created to extend the learning possibilities. Improved ventilation, filtration, and air purification are also ensuring good quality air in the classrooms. Over a period of 30 years, the greater efficiency achieved with this program will save the school district around 47.7 million U.S. dollars. The investments are mainly being covered by public funding. Plus: the savings can be spent on activities to additionally improve students’ performance and learning in the Rowland Unified School District. “The district is very clearly playing a pioneering role with this project,” says Ashley Cascio, an expert who is responsible for Climatec’s public sector customers. She’s convinced that the comprehensive measures will not only greatly benefit the environment but also hone students’ awareness of this topic. ●



Full speed ahead

The most modern technology has dropped anchor in the Scheveningen Harbor in The Hague: A video-based solution uses artificial intelligence in entry and exit control to register and classify all ships and boats. This ensures greater transparency and security.

With the expertise of Bosch and its partner BrainCreators, the Scheveningen Harbor in the Dutch coastal city of The Hague can, for the first time, seamlessly monitor incoming and departing vessels. This is a great help for the employees in the harbor's control center, because the coastal cities are facing major challenges. The harbor of Scheveningen has some unique features, is situated within the borders of the city of The Hague and has a multifunctional character.



“This is exactly where our strengths lie: thinking for our customers, contributing our experience in the industry, implementing tailor-made solutions and implementing them within the shortest possible time.”

Ferry Ditewig,
Business Development Manager,
Bosch Energy and Building Solutions
Netherlands

Combine this with its open aspect and direct access to the North Sea and it becomes an important logistical node which is used for a range of activities but is difficult to monitor. The solution implemented to counter this registers all incoming and outgoing shipping traffic, and helps to identify abnormal behavior and unsafe movements.

NO SUITABLE SOLUTION ON THE MARKET? BOSCH WILL FIND ONE

Bosch was commissioned as a system integrator to develop and implement a video solution that would make the Scheveningen Harbor safer in the future. The city administration of The Hague was convinced by Bosch's cross-industry experience and specialist expertise. In particular, by their experience and expertise

with companies that are subject to specific regulations because they operate systems with an increased risk potential in heavy industry or →

the chemical sector, or because the International Ship and Port Facility Security Code (ISPS Code) applies to them. Since there was no suitable solution on the market at the time, Bosch collaborated with its partner BrainCreators who developed an innovative AI-based video solution, Seagull Surveillance, serving the maritime needs of the Scheveningen harbor. Two intelligent cameras record ship traffic entering and leaving the harbor. A specially developed, complex AI classifies ship types, detects anomalies in traffic and measures the speed of boats and ships. The data is streamed into a video management system in the control center.

THE DASHBOARD PROVIDES AN OVERVIEW OF ALL ACTIVITIES IN THE HARBOR

The solution offers employees in the control center a comprehensive overview of the traffic in the harbor. Boat identifiers are recorded, documented and additional information is automatically appended. The data is analyzed to identify peak times, vessel types and deviations

from the norm. This is all the more important as there is no reporting requirement for most boats and ships that enter the harbor and the harbor cannot simply be closed off.

To be able to register vessels, the AI – developed by partner BrainCreators – first had to be trained on image data from the camera to distinguish the many types of ships and boats that can appear. It also had to learn to classify them. Thanks to the new AI solution, employees can also take care of other tasks without missing ships. The control center is responsible not only for the harbor, but also for the surrounding bridges and tunnels. Ships that are not visible to the on-duty personnel in real time appear as still images on the screen. The dashboard provides staff with an overview of all activities in the harbor. The software protects the privacy of the people being recorded by rendering their faces unrecognizable.



Excited about the new solution and the partnership: Glenn Brouwer (BrainCreators), Cees Duvekot (Harbormaster, The Hague), Ferry Ditewig and Niels van Doorn (both from Bosch, from left to right)



The new AI solution gives employees a complete overview of traffic in the harbor without missing ships.

VIDEO SOLUTION CAN BE TRAINED TO OTHER SPECIFIC REQUIREMENTS

Development, planning and implementation only took around 12 months. There are some new ideas for further developing the system. For example, it could be expanded to include information from external sources, such as meteorological data, tides or the Automatic Identification System (AIS) to exchange ship data. The solution is also suitable for other customers as a rental service, particularly for smaller ports that require cost-effective security solutions. In the future, the AI video solution developed for Scheveningen can also be used in other areas where irregularities need to be detected using image data. The solution is so flexible that it can relatively quickly be trained to other, very specific requirements. ●

Welcome to the smart office – the workplace of the future

The smart office brings digitalization to everyday office life: Integrating networked technologies in office buildings not only offers users maximum comfort, but also forms the basis for resource-efficient management. But how exactly are smart offices changing the world of work?



Everyday working life in offices has changed significantly in recent years. Models such as desk sharing and mobile/hybrid working have become the “new normal”. Employees often choose spontaneously whether they want to stay in their home office or meet in person at their company. But the offices themselves have also evolved: Individual offices and traditional open-plan offices are evolving into activity-oriented areas such as co-working spaces for alternating teams and intelligent areas for communication and

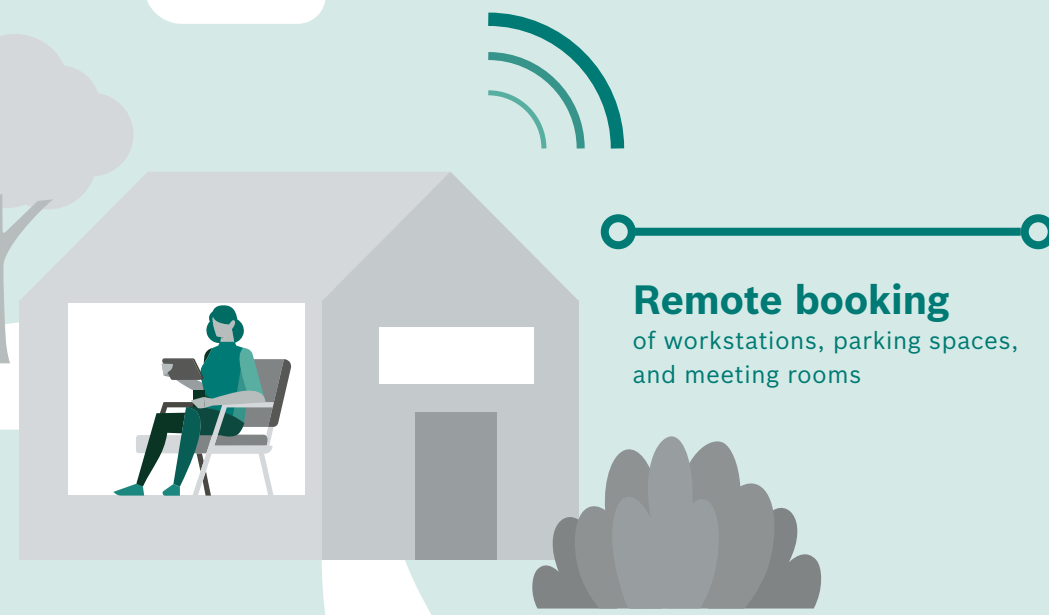
meeting – a mix that has long since become part of everyday life, and not just for younger generations. All these changes in the working environment have led to office space being used more flexibly and not utilized as much on a continuous basis. Building owners and managers are now facing a challenge: How can office buildings respond to people’s changing needs and how is it possible to achieve greater flexibility and efficient management in office buildings? The answer to this lies in a smart office in which a connected and dynamic

system is created using sensors, software, and apps on the basis of a digital twin building. Here, intelligent technologies focus on users and their needs, while the building services work efficiently. These environments offer the greatest possible convenience, are operated in a resource-saving fashion, and also ensure a high level of security.

WHAT IS IT LIKE TO WORK IN A SMART OFFICE?

Digitalization and smartphone usage are already firmly entrenched in

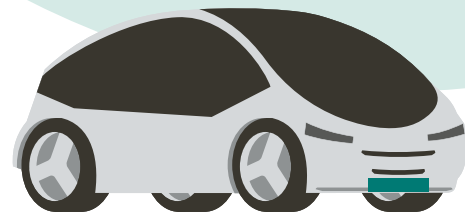
everyday private life. Why should this change when we leave home in the morning and arrive at work? In a smart office, new convenience services are available to users, from booking workstations and parking spaces to mobile access, indoor navigation, and digital time recording. This allows us to find our way around our office building faster, more digitally and, above all, more conveniently. And who doesn’t like working in a building that makes that possible? ☺



Remote booking
of workstations, parking spaces, and meeting rooms



Automatic license plate recognition



Real-time indoor climate



Indoor navigation

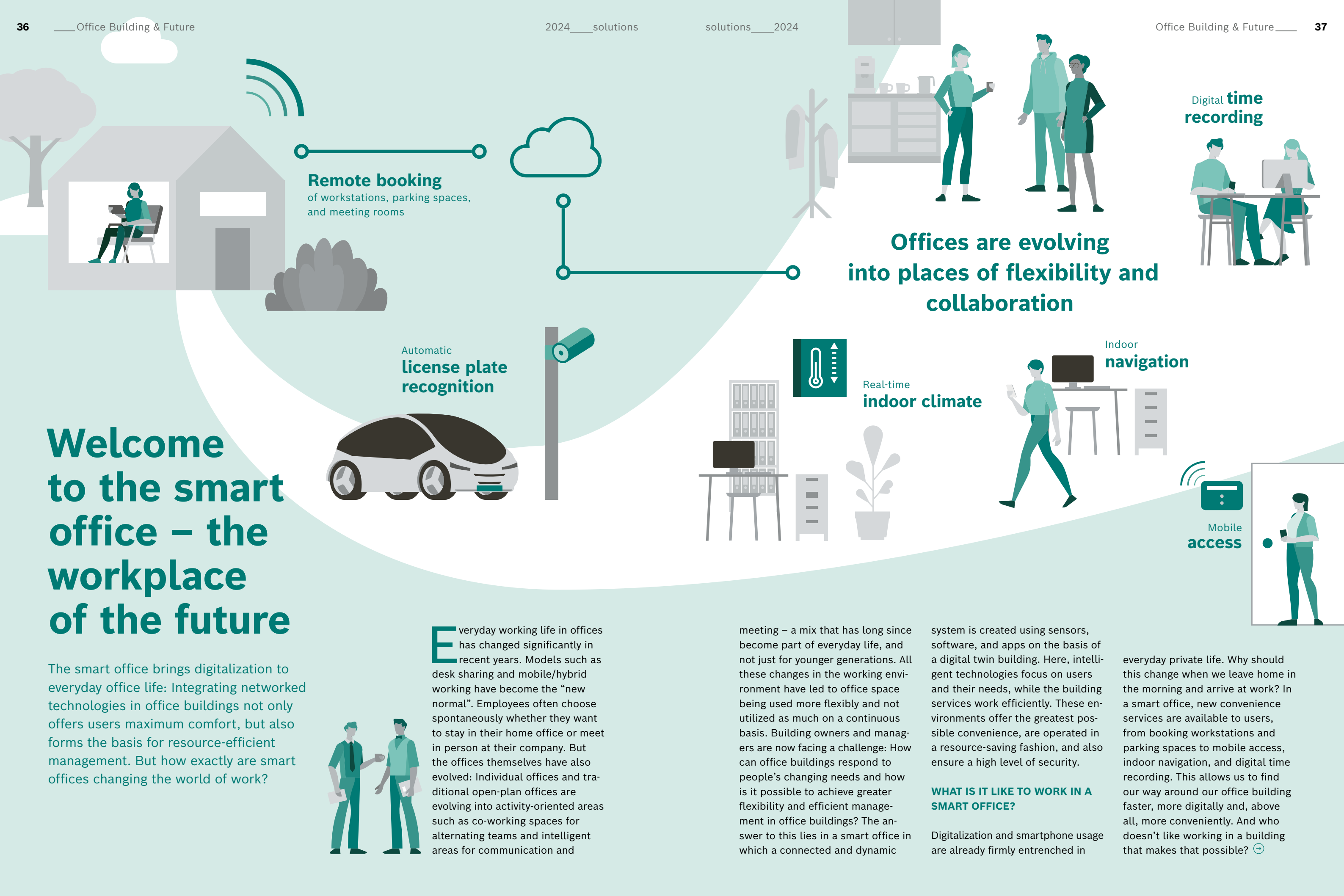


Mobile access



Offices are evolving into places of flexibility and collaboration

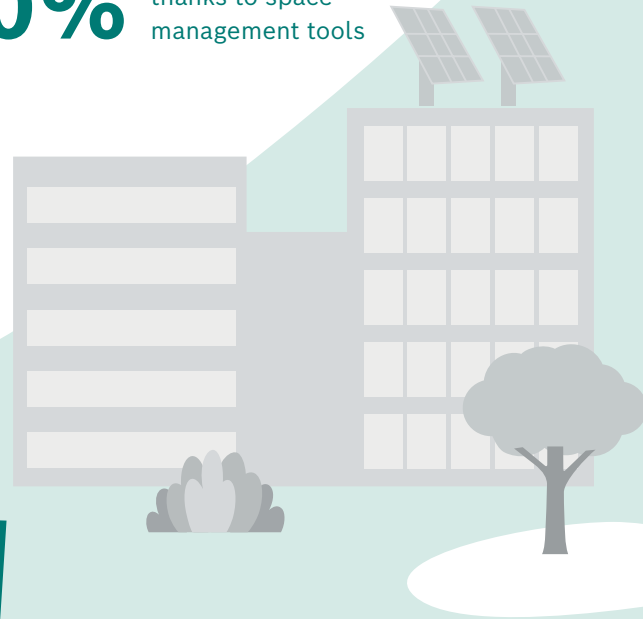
Digital time recording





Office concept and structure enable **activity-based working**

30 to 40% reduction in energy costs thanks to space management tools



Integrated **building management**



HOW CAN A SMART OFFICE BE MANAGED?

For operators and facility managers, switching to a smart office enables improved, energy-efficient, and secure management. This is achieved through maximum transparency and real-time remote access to all relevant building and energy data. Coupled with smart control via building automation, this can effectively increase flexibility. By making intelligent use of all these technical possibilities,

the property becomes digital, networked, and thus attractive for building users and owners in the long term.

Office buildings are already playing a pioneering role compared to other sectors when it comes to using digital solutions for greater efficiency and sustainability. In the coming years, this trend will intensify and the main focus will increasingly be on tailoring office buildings to users' needs. With forward-looking planning and

further development into smart offices, office buildings become places of encounter and remain competitive and attractive in the long term as a result. ●

SIMPLE, FAST, AND SECURE

Modern access management for Singtel

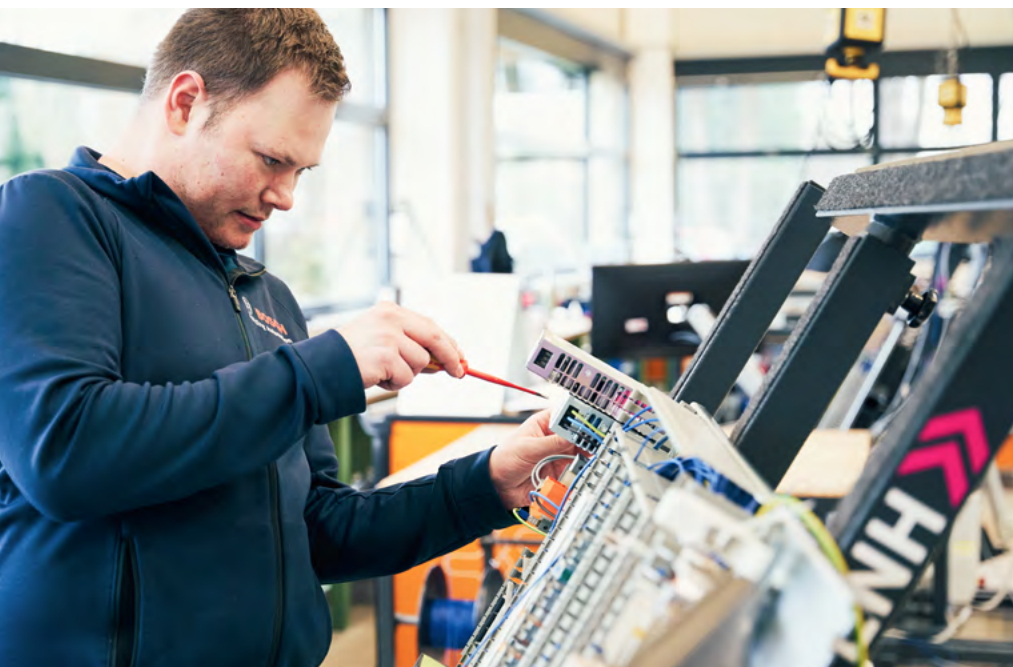
Telecommunications enterprises fall into the category of critical infrastructure, and the security technologies they use therefore have to be state-of-the-art. Singapore's telecommunications group, known as Singtel, has been relying on expertise from Bosch for decades – most recently for modernizing the access control solutions.

Singapore Telecommunications Limited (Singtel) is one of the largest telecommunications companies in Asia Pacific, with over 770 million contract customers and more than 13,000 employees in Singapore alone. It has been relying on Bosch's expertise in the field of access management for more than two decades. The latest job: to completely modernize all of its access control systems at more than 30 locations. In addition to some office buildings, they include more than 20 telephone exchanges arrayed across the island nation that are central nodes of its network infrastructure. "The overall networked solution we implemented includes,

besides card readers and the corresponding chip cards, scanners for vein matching and facial recognition as well as QR code readers for gaining access with a smartphone. "All of the systems are integrated in a higher-level management system that enables centralized operation of access control solutions all over Singapore," explains Cindy Oh, Sales Manager at Bosch Energy and Building Solutions Singapore. The user interface is intuitive to use, and everything is automatically and seamlessly documented. Access rights can be centrally controlled so that only certain defined groups of individuals may access particular areas. ●

Centerpieces that awaken the technical life of buildings

Building automation is the brain of a building. This is where control cabinets are extremely important, though scarcely visible. They keep the system running. That's why Bosch Energy and Building Solutions manufactures unique products that stand for innovation and sustainability.



If you imagine a building as an organism, then the building automation system takes over the tasks of the brain. It takes care of the control and regulation of the technical systems in the building and optimizes energy efficiency, safety, and comfort. The GA-IT network connects all systems and acts as a nervous system in the building, ensuring smooth communication between sensors, actuators, and other components. The control cabinet is the technical heart of this organism, and it processes, coordinates, and controls electrical signals and currents. It is therefore the central control center that ensures that the entire system functions effectively.

As every building is different, it also has specific requirements. The control cabinet plays a key role because, as an individualized solution, it can be flexibly adapted to the new specific requirements of each

building. It is open to other systems and thus to the integration of future technologies. Therefore, a control cabinet also means a building's sustainability. This is why Bosch Energy and Building Solutions manufactures individually planned and programmed unique products of the highest quality in its own production facilities. ●



A visit to production manager Dirk Späte in the production facility in Verl provides an insight into the construction of modern control cabinets and shows the role played by digital twins. [Click here for the tour.](#)



Top partnership:
Christian Wichert from Bosch,
Mirco Markfort and
Wolfgang Kirschniok from
the Rudolf Weber Arena
(from left to right)

It's showtime!

Bosch Energy and Building Solutions is bringing together new and existing solutions to update the security technology in the Rudolf Weber-Arena, Oberhausen, one of the largest multifunctional arenas in Germany. There is now a management system that not only provides a complete overview, but also ensures smart operation. And if technical support is required, the Bosch team is also available straightaway via remote service.

From sporting events to shows, parties and concerts, up to 12,700 spectators cheer for their stars during the various events held in the Rudolf Weber-Arena in Oberhausen. It's not only the varied program, but also the arena's central location in the Ruhr region, and its size, that make it so attractive to visitors and event organizers. To guarantee the highest level of visitor safety both now and in the future, the hall has had its security technology updated, a process in which the team of experts from Bosch Energy and Building Solutions played a key role. As part of the modernization of the fire alarm, intrusion alarm, public address, and voice alarm solution, which Bosch had already implemented when the arena was built in 1996, the operators have now opted for a networked video surveillance and access control solution as well. "The Oberhausen arena has been our customer for many years," says Christian Wichert, Senior Sales Manager at Bosch Energy and Building Solutions. "Therefore, its operators are aware of our reliability and expertise. This also means that we implemented our solutions during ongoing operations, because an event arena like this cannot afford any downtime." ↻



The entrances are also under video surveillance. In order to protect data privacy, there are clear stipulations as to when the cameras may record which areas.

KEEPING AN EYE ON EVERYTHING THANKS TO INTELLIGENT VIDEO TECHNOLOGY

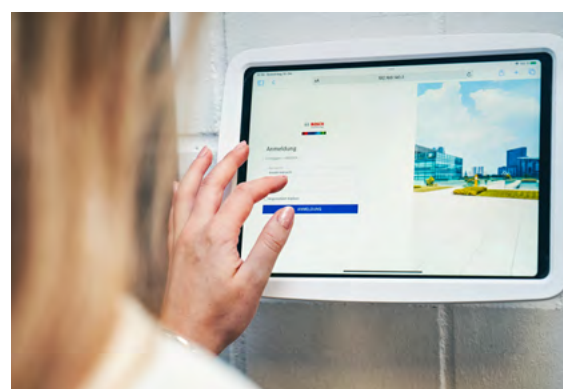
The new video solution is used to monitor all indoor and outdoor areas of the multifunctional arena. Over 30 IP cameras, including high-performance HD dome cameras that can be controlled remotely, monitor the indoor and outdoor areas. 4K cameras are aimed at the entrances to selected areas. In addition, the areas where the public move around are also monitored. Several cameras are equipped with intelligent video image analysis, which makes it possible to immediately recognize unusual details, such as a backpack that has been left behind. Video data can also be analyzed retrospectively using a forensic search function, for example to help the police find video evidence more quickly.

“Introducing this video surveillance system was highly important for us. Without the overall perspective it provides, up to now we have had to rely solely on information from the security service on what’s happening in and around the arena. Now we can operate directly from the control center,” says Mirco Markfort, General Manager of the Rudolf Weber Arena.

NEW DIGITAL PROCESSES MAKE OPERATIONS EASIER

Bosch implemented a modern visitor management system for access control of suppliers and day visitors at the main entrance. Now visitors register via a tablet, after which employees can automatically issue access cards. The solution also makes it possible to track who is in the

Visitor management registration via tablet

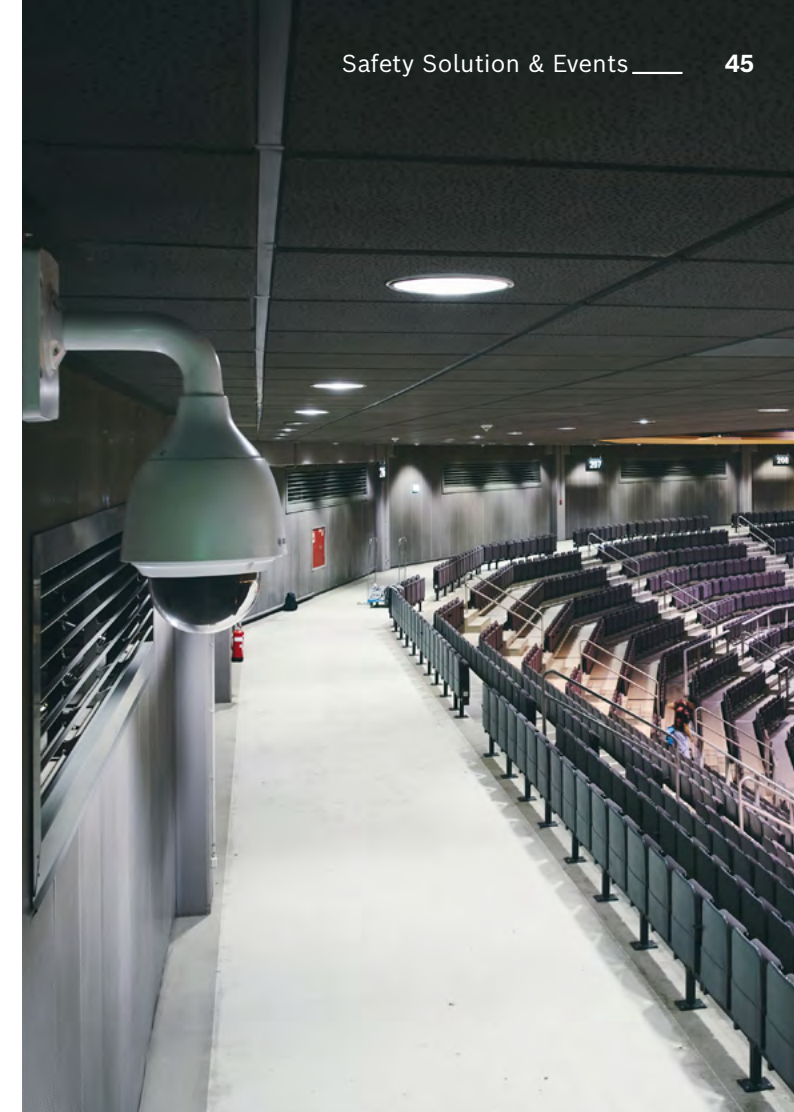


property at any time. If the building has to be evacuated, the system can be used to check whether everyone has left the arena. Fire protection, voice alarm, video surveillance, burglar alarm system, and access control are integrated into a user-friendly management system. This allows employees in the control center to control and manage all security systems easily and clearly from just one workstation. The screen shows a plan of the building including all levels, and the video cameras can be clicked on individually to view the respective recordings. “All systems are now linked together and visualized on one interface. That was a key reason why we chose Bosch to provide us with the video surveillance and access control system,” says Wolfgang Kirschniok, Director of Operations at the Arena. Mirco Markfort adds: “In addition to the prices offered, what counts for us is the quality, good experiences in the past, and the system integration.”

TECHNICAL SUPPORT WITH ROUND-THE-CLOCK SERVICE

For the maintenance and servicing of this complete solution, those responsible also turn to Bosch. As an event venue that mainly operates in the evenings and at weekends, the Rudolf Weber Arena relies on the 24/7 availability of the service team, which can be on site quickly if required or can connect directly to the systems via remote access. “The customer knows that they can rely one hundred percent not only on our technical solutions, but also on our team,” says Christian Wichert.

Over 30 IP cameras monitor every angle, in addition to intelligent video analysis



The individual cameras can be controlled in the control center





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SUSTECO SOLUTIONS GMBH

New services for the real estate industry

The newly founded Bosch subsidiary Susteco Solutions GmbH, based in Berlin, commenced business operations in October 2023. The company's focus is on customer-centered further development of a technology- and service-agnostic platform, both open and secure at the same time. This platform is intended to serve as a central point of contact for all players in the real estate sector for transparent recording, networking, and analysis of all building and consumption data. The aim is to enable sustainable, value-enhancing management and operation of real estate portfolios. In addition, the platform services of the ecosystem partners provide the necessary transparency in the ESG management of integrated buildings and uncover optimization potential. The cross-domain solution is aimed at institutional investors and their fund, portfolio, and asset management teams who want to benefit from these advantages in terms of economic efficiency and sustainability when managing their existing buildings. More than 45 partners of Susteco Solutions GmbH, including building planners and developers, leading tech start-ups, and experts on energy and sustainability, are already part of the ecosystem.

Invented for life



ENDLESS
POSSIBILITIES
with NEXOSPACE



The entire cosmos of building management in one digital place.

Performance built on Partnership

As your reliable partner, we provide connected and integrated solutions that make your buildings more secure, more comfortable and more efficient. Our experts support you as consultants, installers, and service providers with tailor-made safety and security systems, building automation solutions as well as individual energy services.

Take advantage of our extensive expertise and integrated solutions based on the latest technologies – all from a single source located near you. Feel free to contact us at any of our many sites.

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