

**[ 01 ] CES 2018: Bosch is showing these smart solutions in Las Vegas**

**[ 02 ] CES 2018: Bosch sees future in smart-city business**

**[ 03 ] Smart City Expo World Congress 2017, Barcelona**

**[ 04 ] CES® 2018 Innovation Award: Bosch smart city solution Climo helps to manage air quality**

**[ 05 ] Bosch is making hospitals smart**

**[ 06 ] A smart city in China: Bosch to make Tianjin intelligent**

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## **CES 2018: Bosch is showing these smart solutions in Las Vegas**

### Focus on technologies for connected cities

January 8, 2018  
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- ▶ Bosch booth at CES 2018: Central Hall, Booth #14028 / Twitter #BoschCES
- ▶ Connected cities: greater security, energy efficiency, and convenience
- ▶ Connected mobility: Bosch is working on solutions to make tomorrow's mobility free of accidents, stress, and emissions
- ▶ Connected homes: smart homes rely on sensors from Bosch
- ▶ Connected manufacturing: when it comes to Industry 4.0, Bosch is a leading user and a leading provider
- ▶ CES 2018 Innovation Awards®: three honors for Bosch solutions

**At CES 2018, to be held in Las Vegas from January 9 to 12, 2018,** Bosch will be demonstrating that the smart, connected city of tomorrow is already a reality. The supplier of technology and services will be presenting innovative solutions and services for urban mobility and a connected working world as well as for smart homes and buildings. You will find Bosch in the **Central Hall, Booth #14028.**

### **Solutions for connected cities: safety, energy efficiency, reduced stress**

Taking the hassle out of parking: Bosch will be presenting various solutions for connected and automated parking. Community-based Parking enables drivers to find what has become a rarity in residential areas and city centers: an empty parking space. As they drive by, cars automatically recognize and measure the size of the gaps between parked cars, transmitting the data in real time to a digital parking-space map that enables drivers to locate vacant parking spaces. Bosch is planning to launch Community-based Parking in up to 20 U.S. cities in 2018. In places such as L.A., Miami, and Boston, the company will make real-time information about on-street parking available to car manufacturers.

Automated valet parking from Bosch goes one step further – the car parks itself without any action needed on the driver's part. Drivers leave their vehicle at the entrance to the parking garage and send a corresponding command from a

smartphone app: the car is guided to a free space and parks there without assistance. One factor making fully automated parking a reality is smart parking-garage infrastructure, which connects with the vehicle's on-board software.

Product debut – a small box monitors air quality in real time: At CES 2018, Bosch will be presenting Climo, an innovative new system for rapid, cost-effective monitoring of the microclimate. Municipalities can use an app to collect real-time data on air quality – as well as other factors such as humidity and pollen levels. The information gathered allows them to decide what action to take to improve air quality, such as diverting traffic during rush hour. Climo is one hundred times smaller than conventional systems and ten times cheaper. The product was developed in India and won a CES Honoree Innovation Award in the Smart Cities category. Multiple Climos have been monitoring the air quality in Las Vegas since mid-December and will continue to do so during CES 2018.

Intelligent power supply with DC microgrids: Microgrids are relatively small, independently controlled energy-management systems that can power large buildings. Their ability to run on both traditional and renewable fuels means they have excellent environmental credentials. Another major advantage of microgrids is their self-sufficiency, which makes them a reliable source of power when a weather- or security-related outage affects the broader grid. Unlike conventional systems, Bosch microgrids run on direct current (DC) instead of alternating current (AC), enabling energy savings of up to ten percent. The Bosch DC microgrid was developed in the U.S. as part of a strategic project to develop new business opportunities for the company in a start-up environment. In 2015, Bosch outfitted an existing facility at Fort Bragg, North Carolina, with a smart-building microgrid solution which supplies less expensive, more eco-friendly electricity.

Early warning about flooding: This system offers early warning about potential flooding by digitally monitoring the levels of rivers and other bodies of water close to cities in real time. Up to now, water levels have always been measured by mechanical means. It can take hours until the data is available for third parties. Bosch is currently testing the flood monitoring system in a pilot project on the Neckar river in Ludwigsburg, Germany. There, ultrasonic sensor probes and cameras track changes in water level, water velocity, and rate of discharge. This data is sent to the Bosch IoT Cloud for assessment. When critical thresholds are exceeded, advance alerts are sent by SMS to the affected municipalities, residents, and business owners. This gives them enough time to take precautions against flooding or flood damage. A number of flood-prone municipalities in India and South America have already expressed interest in the solution.

Vivatar app – a digital guardian angel: Going jogging in the dark, or heading home on foot after the last bus has already left is enough to make anyone feel uneasy. This is where the Bosch Vivatar app comes in. People can use it to contact friends and family and be digitally “escorted” home via GPS. Users decide for themselves when they should be accompanied and by whom. The Premium version of Vivatar grants users 24/7 access to the Bosch Emergency Assistant, a professionally trained emergency team.

Bosch start-ups are developing solutions for smart cities: Bosch wants to tap new fields of business quickly with its in-house start-up platform. At the same time, the innovative start-ups using it benefit from the infrastructure provided and from the long-standing experience of a supplier of technology and services such as Bosch. At CES 2018, two start-ups from the platform will be presenting their connected-city solutions. One of these is the MyScotty app, which allows users to access as well as pay for local shared mobility services from different providers. A single sign-on is enough to gain permanent access to thousands of cars, bicycles, and scooters. This means far fewer apps are needed. MyScotty debuted in Germany mid-2017, and other countries are set to follow. Another solution, the smart mobility center BePart, is still in the development phase. It is designed to enable cities and towns to avoid congestion by diverting traffic during rush hour. Commuters can receive recommendations in real time from the municipal authorities and adjust their routes accordingly. The goal is to improve air quality in conurbations. Initial pilot projects will run in one or two cities in Germany in 2018.

### **The new mobility of the future: smart, secure, stress-free urban travel**

Next-generation cockpit: Bosch delivers a futuristic cockpit for the next generation of motor vehicles. Visitors to CES 2018 can experience an end-to-end display and control concept live in a demonstration vehicle based on a Cadillac Escalade. With its five interconnected displays, the interface between the driver and the vehicle (HMI) makes driving a safer and less stressful experience, and allows drivers to concentrate better on the traffic situation. A cockpit camera and voice-recognition software recognize the driver and automatically load not only their personal settings for the seat and mirrors, but also their favorite playlists. Without having to take their eyes off the road, drivers can operate the infotainment, navigation, and air-conditioning systems either via voice control or a touchscreen with haptic feedback.

Bosch will present mobility services for connected vehicles in a new concept car based on the BMW i3. As the number of connected vehicles grows – according to Gartner, around 250 million cars will be connected worldwide by 2020 – so too does the potential for new digital services. Bosch offers a wide array of vehicle

services that can help drivers find a free charge spot or parking space with a minimum of fuss. Other services include wrong-way driver alert and automatic activation of an emergency call after an accident.

Product debut – Telematics eCall plug: After debuting the first retrofit eCall adapter for vehicles in 2016, Bosch is now offering a smart add-on. The new TEP120 can not only detect a crash and send a call for help in an emergency, but also analyze driving behavior. A dongle that can simply be inserted in the car's cigarette-lighter socket, TEP120 uses an accelerometer and an integrated microcontroller to collect vehicle dynamics data on the basis of acceleration, braking, and cornering. At the end of every trip, the system transmits this data via Bluetooth to the driver's smartphone. Careful drivers can use the data to lower the premium rates for their car insurance.

Future mobility: Bosch's connected show car encapsulates the future of mobility. The show car is always online, and connected to its surroundings as well as the owner's smart home. This connectivity allows drivers to reserve the nearest e-bike or close the windows at home if it starts to rain – tapping or swiping the screen is all it takes.

Convenient use of apps on motorcycles and other two-wheelers: With its mySPIN smartphone integration solution, Bosch makes it possible for riders to easily access advanced functionalities such as navigation, personal audio, and weather on their smartphones, even while riding their vehicles. Already available for cars since 2014, mySPIN has now been optimized for two-wheelers and powersports vehicles. At CES 2018, Bosch is demonstrating mySPIN on an on-road vehicle from BRP: a Can-Am® Spyder® F3 Limited.

Connected heavy trucks for optimized logistics: Together with Daimler Trucks and Fleetboard, Bosch has developed a common telematics platform, which fleet managers can use to monitor the technical status of their vehicle components. It warns them of possible breakdowns before they happen, helping avoid unplanned repairs, optimize scheduled repair shop visits, and increase the reliability of deliveries. Bosch's pioneering telematics solution for smart heavy trucks received the CES 2018 Innovation Award in the Tech For A Better World category.

Alerts in critical situations through vehicle-to-x communication: A traffic jam beyond the crest of a hill or a vehicle entering suddenly from a hidden side road: when vehicles communicate with each other and their surroundings, they send warnings of critical situations like these – and make driving safer and less stressful. Bosch's new Connectivity control unit (CCU) is an on-board unit that

regulates vehicle-to-x (vehicle-to-everything) communication. The vehicle-to-x CCU is compatible with all current communication standards such as wifi, LTE, or DSRC, and can be deployed anywhere in the world.

Securing connected vehicles: The IDPS intrusion detection and prevention system developed by ESCRYPT, a Bosch subsidiary, uses dedicated security software to recognize and analyze potential attacks on connected vehicles, allowing effective countermeasures to be taken rapidly to protect individual vehicles or an entire fleet. ESCRYPT, a security specialist, will also be debuting a data-security solution for vehicle-to-x communication at CES 2018.

### **Smart homes rely on sensor technology and software from Bosch**

Roxter robotic vacuum cleaner with artificial intelligence: Bosch is a pioneer when it comes to kitchen connectivity. Last year, the company rounded out its portfolio of web-enabled appliances across all appliance categories. But the smart home is not yet complete. This year, Bosch is launching the first connected robotic vacuum cleaner: Roxter. This high-performance helper is equipped with sensors that it uses to scan and make interactive maps of its environment. Thanks to RoomSelect, it can be given specific jobs as well as instructions about no-go areas. Roxter can even be controlled by voice command using Amazon Alexa by saying, for example: “Alexa, have the Home Connect robot vacuum the living room!”

Since fall 2017, it has also been possible to operate the smart home camera solutions using Amazon Alexa voice commands – making them some of the first cameras ever to offer this option. Starting in early 2018, it will be possible to control the entire Bosch smart home system using voice commands.

Award-winning cameras for a safe home: The 360° interior camera and the Eyes exterior camera – which have both received prizes such as the RED DOT AWARD 2017 – are available as smart, self-contained solutions. Starting in 2018, it will also be possible to integrate them into Bosch smart home system solutions if desired. Moreover, they enhance alarm systems by verifying the situation through a camera recording as soon as the alarm notification is triggered.

Connected Building platform: This cloud-based solution analyzes data from building technology and sensors, such as air quality and human activity. The platform therefore provides a basis for efficient building management, for example through predictive maintenance and approaches toward increasing productivity. It also provides information on room use and workspace utilization. For example, this lets employees in offices with flexible workstations quickly find the next available space and enables the optimal deployment of cleaning

services. Detecting whether people are present and locating equipment help to optimize processes within the building. The solution was developed on the basis of the Bosch IoT Suite.

A small but high-performing acceleration sensor: A new, extremely energy-efficient MEMS Sensor, the BMA400, is being used in wearables and IoT applications. It consumes ten times less energy than existing products while delivering the same high performance. This helps batteries last longer and significantly extends the battery life of devices. The acceleration sensor is particularly interesting for applications in the smart home, such as security systems. An integrated, energy-efficient pedometer also makes it possible to equip new wearables, such as normal wristwatches, with an activity detection function without any major development costs. The sensor received a [CES 2018 Innovation Award](#) in the category Embedded Technologies. At CES 2018, visitors can experience the BMA400 interactively by playing a dice game at Bosch booth #14028 in the Smart Home area.

Product debut – new sensor offers improved flight and navigation properties: Sensors in drones and robots must meet particularly demanding requirements – they have to be extremely stable and perform reliably even when exposed to strong vibrations caused by uneven surfaces or integrated motors, for example. With the BMI088, Bosch Sensortec has developed an inertial measurement unit (IMU) which is particularly well-suited to use in such demanding environments. The micro-electro-mechanical-systems (MEMS) sensor features a high resistance to vibration, performance, robustness, and stability. The BMI088 suppresses vibrations for consistent and precise navigation. This enables the extremely accurate control of drones, even in the presence of strong vibrations, and thus makes it ideal for robotics applications.

Interactive user interface: The use of electronic devices in everyday life is on the rise – be it as wearables on the go or in the smart home. This is making it more and more important to improve the way that people and technology interact. One key component for solutions like these is Bosch's microscanner. It creates flexible and intuitive virtual user interfaces – and projects these in high resolution onto any ordinary surface. This tiny sensor can thus be used to realize a precise, on-demand user interface for the internet of things, including for household appliances, tablets, and social robots, to name a few examples. The result is the ability to interact with devices in an intuitive, and user-friendly way, enabling the seamless integration of their functions into everyday life.

### **A new use for old technology**

Bosch is expecting [additional sales of more than 1 billion euros and a further 1 billion euros in savings from Industry 4.0 solutions by the year 2020](#). As a leading user and leading provider of Industry 4.0, Bosch provides everything from a single source for connected manufacturing and the entire supply chain. The company also offers retrofit solutions. One example is its IoT gateway, which combines sensors, software, and IoT-compatible industrial controls, making it possible to detect the condition of machinery. This can enable operators of older machines to harness the benefits of connected industry. A large number of machines used by tradespeople and in factories are missing some of the essential requirements for Industry 4.0, such as sensors, software, or connections to the company's IT systems. In Germany alone, tens of millions of machines are affected. The potential for retrofit solutions is thus extremely high – globally, the market is worth billions. Thanks to the IoT gateway, Robert Bosch's 130-year-old lathe has also been catapulted from the Industry 1.0 age into the age of Industry 4.0. At CES 2018, Bosch will be displaying a replica that is true to the original.

### **Interactive station: Bosch uses game to show how the IoT works**

The "3 S's" of the IoT – software, sensors, and services: At CES 2018, Bosch will be demonstrating for the first time how the IoT works in just three steps at a new game station. One: sensors enable things to react and provide data. Two: data are sent to the cloud using software and algorithms, and analyzed in real time. Three: on this basis, new services can be rapidly developed that make everyday life simpler, safer, and more efficient – and sometimes even save lives. One example of this is Bosch's eCall. Visitors to the booth are invited to use their hand to hit a buzzer with a Bosch acceleration sensor hidden inside. The sensor requires a force of 5 G's to react. Once this has been reached, an airbag is triggered virtually on the screen. Thanks to the software algorithm, the signal of the airbag sensor is sent to the Bosch IoT Cloud, where the data are processed to allocate the appropriate service. In this case, the Bosch eCall service alerts the Bosch call center. At CES 2018, this will be taking place on the screen. But in real life, the control center will contact the driver in the event of a collision to determine whether a service vehicle should be sent to provide assistance or whether an ambulance is necessary. If the driver does not respond to the call, paramedics are dispatched immediately.

The game was developed together with the XDK, a sensor development platform that can be used to develop prototypes and new applications for the IoT. The station also has one more surprise in store: hitting the buzzer triggers a camera, which snaps an action photo that can be downloaded using a QR code and shared on social media using hashtags such as #BoschCES.

### **CES Innovation Awards: three awards for Bosch**

More convenience, more security, and more possibilities: trucks, homes, apartments, and wearables are all becoming smarter and more efficient with Bosch's connectivity solutions. At CES Unveiled in Amsterdam, [Bosch received two CES 2018 Innovation Awards for these solutions](#). Every year, this prestigious prize is awarded to the best solutions ahead of the world's largest electronics show and is an indicator of the trends of the future. On January 7, 2018, Bosch's microclimate monitoring system Climo received an CES Honoree award in the Smart City category at CES Unveiled in Las Vegas.

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- **BOOTH: Tuesday to Friday, January 9–12, 2018**, in the Central Hall, booth #14028
- **FOLLOW** the Bosch CES 2018 highlights on Twitter: **#BoschCES**
- **PANELS WITH BOSCH EXPERTS:**
  - **Tuesday, January 9, 1:30 – 3:15 p.m.** (local time)  
“[Connect2Car: Next-Gen Automobility](#)” session with Kay Stepper, Vice President of Bosch in North America, head of driver assistance and automated driving,  
Las Vegas, Convention Center, North Hall, N256
  - **Wednesday, January 10, 2018, 1:45–2:30 p.m.** (local time)  
“[Connected Vehicles in Connected Ecosystems](#)” session with Mike Mansuetti, President Bosch North America,  
Smart Cities Conference, Westgate.
  - **Thursday, January 11, 2018, 11:30 a.m to 12:30 p.m.** (local time)  
“[The Future of Robots at Work and Home](#)” session with Phil Roan, Senior Engineer Robotics, BSH Hausgeräte GmbH,  
Las Vegas Convention Center, North Hall, N258

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*The Bosch Group is a leading global supplier of technology and services. It employs roughly 375,000 associates worldwide (as of December 31, 2016). The company generated sales of 73.1 billion euros in 2016. Its operations are divided into four business sectors: Mobility Solutions, Industrial Technology, Consumer Goods, and Energy and Building Technology. As a leading IoT company, Bosch offers innovative solutions for smart homes, smart cities, connected mobility, and connected industry. It uses its expertise in sensor technology, software, and services, as well as its own IoT cloud, to offer its customers connected, cross-domain solutions from a single source. The Bosch Group's strategic objective is to create solutions for a connected life. Bosch improves quality of life worldwide with products and services that are innovative and spark enthusiasm. In short, Bosch creates technology that is "Invented for life." The Bosch Group comprises Robert Bosch GmbH and its roughly 440 subsidiaries and regional companies in some 60 countries. Including sales and service partners, Bosch's global manufacturing and sales network covers nearly every country in the world. The basis for the company's future growth is its innovative strength. At 120 locations across the globe, Bosch employs some 59,000 associates in research and development.*

*The company was set up in Stuttgart in 1886 by Robert Bosch (1861-1942) as a "Workshop for Precision Mechanics and Electrical Engineering." The special ownership structure of Robert Bosch GmbH guarantees the entrepreneurial freedom of the Bosch Group, making it possible for the company to plan over the long term and to undertake significant up-front investments in the safeguarding of its future. Ninety-two percent of the share capital of Robert Bosch GmbH is held by Robert Bosch Stiftung GmbH, a charitable foundation. The majority of voting rights are held by Robert Bosch Industrietreuhand KG, an industrial trust. The entrepreneurial ownership functions are carried out by the trust. The remaining shares are held by the Bosch family and by Robert Bosch GmbH.*

More information at [www.bosch.com](http://www.bosch.com), [www.iot.bosch.com](http://www.iot.bosch.com), [www.bosch-presse.de](http://www.bosch-presse.de),  
[www.twitter.com/BoschPresse](https://www.twitter.com/BoschPresse).



## **CES 2018: Bosch sees future in smart-city business** Smart solutions for better air quality, and for more security and convenience

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- ▶ Stefan Hartung: “For a long time, the smart city was a vision. We’re helping make it reality.”
- ▶ Good-bye to air pollution: Climo measures and analyzes air quality in real time (new product)
- ▶ Good-bye to flooding: digital flood monitoring system keeps track of river water levels and gives flood warnings well in advance
- ▶ Good-bye to the search for parking: Bosch to offer community-based parking system in as many as 20 U.S. cities from 2018

Las Vegas, NV – Urban populations are growing: according to the [United Nations](#), roughly two-thirds of the global population will live in conurbations by 2050. In 2014, this figure was just one-half. Urbanization is increasing, and with it the challenges cities have to solve. Even today, therefore, there is a considerable need for smart solutions. Speaking at CES in Las Vegas, the Bosch management board member Stefan Hartung said: “We need a new conception of the city. One key factor here is technologies that make cities smart and worth living in. In the long run, cities without intelligence will not survive, but succumb to gridlock.”

Bosch is working to equip cities and neighborhoods for the future, offering smart mobility, better air quality, more convenience, greater security, and many new services. In short, the aim is significantly better quality of life in cities and neighborhoods. “When it comes to smart cities, few other companies can match Bosch’s comprehensive portfolio, cross-domain knowledge, and outstanding expertise in sensors, software, and services – and all this from a single source,” Hartung said. From January 9 to 12, the supplier of technology and services will be presenting many new solutions that make cities smart at CES 2018, the world’s largest electronics show. These range from a new compact unit that measures and analyzes air quality in real time, to a system that digitally monitors

river water levels and gives early warning of flood risks, to a completely automatic parking space service that makes drivers' lives easier.

### **For more business: the smart-city market is booming**

Some of the world's major metropolises are already synonymous with the term "smart," among them Barcelona, Seoul, and London. Across the globe, cities large and small are investing in smart-city technologies. According to a study on behalf of Bosch, the smart-city market will grow 19 percent each year between now and 2020, reaching a volume of 800 billion dollars (680 billion euros). Bosch believes this is a great business opportunity: "For a long time, the smart city was a vision. We're helping make it reality. Bosch is in an excellent position to make the connected city a technological and commercial success," Hartung said. The company is currently involved in 14 extensive smart-city projects in places such as San Francisco, Singapore, Tianjin, Berlin, and Stuttgart. Others are planned to follow. Within the past two years, the company has doubled its sales from cross-domain projects to nearly one billion euros, and this figure is set to rise further.

In the Bay Area city of San Leandro, for example, the company has equipped roughly 5,000 streetlights with LEDs and supplied a system for remote management of the city's street lighting. In this way, the lights are only switched on when they are actually needed. With this solution, San Leandro will be able to save roughly 8 million dollars over the next 15 years. At the Bosch CES press conference, Mike Mansueti, the president of Bosch North America, said: "Whether cities are big or small, our smart solutions will help them save energy, and money too." In the case of San Leandro and its 100,000 inhabitants, sensors can be used to measure and analyze air quality, and cameras can automatically re-route traffic in the event of congestion.

### **For more connectivity: IoT and artificial intelligence**

The internet of things (IoT) has laid one of the main foundations for the connected city. The IoT is finding its way into all walks of life: a Gartner study predicts that some 230 million homes worldwide – roughly 15 percent of all homes – will be intelligently connected by 2020. Here as well, the potential is huge, with market volume estimated to reach 250 billion dollars annually by 2020. By the same year, more than 20 billion devices worldwide will be connected with each other – smoke detectors, burglar alarms, electricity meters, home appliances, and many more. "Bosch recognized this potential early on," Hartung said. "Even now, more than half our electronic product classes are web-enabled – and the aim is for this to be 100 percent by 2020. Not only that: for each of our products, we want to offer accompanying services."

Another driver of the rapid development of smart cities is artificial intelligence (AI). Bosch intends to further expand its research in this field. Last year, the company opened a research center for artificial intelligence, which now employs some 100 associates in Renningen, Germany, Palo Alto, CA, and Bengaluru, India. By 2021, Bosch will invest some 300 million euros in expanding the center. The company anticipates that, ten years from now, scarcely any product will be conceivable without AI.

### **For better air quality: Climo creates basis for targeted action**

Air quality is one of the greatest challenges cities face. Thanks to smart technologies, cities can take faster and more targeted action to improve it. However, this depends on accurate measurements. At CES 2018, Bosch is presenting a new solution that it developed together with Intel – the Climo microclimate monitoring system. Climo measures and analyzes 12 parameters that are important for air quality, including carbon dioxide, nitrogen oxide, temperature, and relative humidity. The appliance is one-hundredth the size of conventional systems – and one-tenth the cost. Climo won a CES Honoree Innovation Award in the “smart cities” category.

### **For early warning: digital monitoring of rivers**

In many regions, climate change is resulting in unpredictable weather. Researchers expect that heavier rainfall will result in more frequent flash flooding. Up to now, mechanical devices have been used to measure river water levels. Hours may pass before these measurements become available for others. However, the flood monitoring system changes all this. In real time, it monitors the water level in rivers and other bodies of water close to cities, and warns of an impending flood. In a pilot project, Bosch is testing the new system on the Neckar river near Ludwigsburg, Germany. Ultrasonic sensor probes and cameras track changes in water level, speed, and throughput. The data is sent to the Bosch IoT Cloud for processing. Should critical thresholds be exceeded, the affected municipalities, residents, and business owners are alerted well in advance by text message. This gives them enough time to take precautions against flooding and flood-related damage. Among those interested in the solution are a number of Indian and South American municipalities that frequently have to combat flooding.

### **For more time: connected parking**

Urban traffic will increase by [roughly one-third by 2050](#). Bosch is working to make tomorrow's mobility free of accidents, stress, and emissions. At CES 2018, the company is presenting many solutions that lead toward this goal. Urban traffic plays a role in roughly half the smart-city projects Bosch is involved in. Parking is a particular focal point. U.S. drivers now spend more than [40 hours a year](#) stuck in congestion, wasting some 160 billion dollars in the process. Of this time, roughly one-third is wasted on the search for parking alone. This is where Bosch can help: with its community-based parking, the company simplifies the search for a suitable space. As they drive by, cars automatically recognize and measure the size of the gaps between parked cars, transmitting the data in real time to a digital map. In this way, drivers can have themselves guided directly to free parking spaces. Bosch is already testing this service in German cities, including Stuttgart. This year, as many as 20 U.S. cities will follow, including Los Angeles, Miami, and Boston.

In early 2018, moreover, Bosch and Daimler will be launching a new automated valet parking service. Cars in the Mercedes-Benz Museum parking garage in Stuttgart will look for a parking space and park themselves, without a driver. This cuts out stress, and makes more efficient use of parking lots – the same amount of space can accommodate up to 20 percent more vehicles. One factor making fully automated parking a reality is smart parking-garage infrastructure, which connects with the vehicle's on-board software. Bosch recently won a Frost & Sullivan's 2017 Technology Innovation Award for this driverless parking solution.

### **For energy and cost savings: Bosch DC microgrids**

According to the [International Panel on Climate Change \(IPCC\)](#), cities account for roughly 75 percent of total global energy consumption. Forty percent of this is attributable to buildings alone. And the [BP Energy Outlook 2035](#) estimates that global energy consumption will rise 30 percent by 2035. Bosch has many smart energy management solutions that can reduce power consumption. One of these is the Bosch DC (direct current) microgrid, which can be used to supply power to large buildings or building complexes. Since microgrids are generally fed by renewable sources, they are especially eco-friendly. DC microgrids consume up to 10 percent less energy than conventional power plants. Another major advantage is their self-sufficiency, which makes them a reliable source of power when a weather- or security-related outage affects the broader grid.

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## **Smart City Expo World Congress 2017, Barcelona** Bosch to make the cities of the future smart

November 14, 2017

PI 9501 RB bj/KB

- ▶ San Leandro: smart streetlights save electricity
- ▶ Tianjin: Bosch to make a Chinese seaport smart
- ▶ Smart-city solutions for mobility, energy, buildings, safety, security, and e-governance

Stuttgart, Germany and Barcelona, Spain – Every 16 months, a city crosses the 10-million-inhabitant threshold, making it a megacity according to the UN definition. Of the 31 known megacities today, 24 are in emerging countries, and nearly all of them have developed in the last 35 years. This trend is set to continue. By 2050, more than six billion people worldwide will live in cities, and these cities will need to provide increasing levels of convenience, energy efficiency, safety, and security. New concepts for urban mobility and the sustainable use of resources will also be required. The evolution of a city into a smart city can help to meet the needs of megacities and urban spaces. At the Smart City Expo World Congress 2017 in Barcelona (November 14-16), Bosch will present solutions and projects for intelligently connected cities designed to bring greater convenience, safety, security, and efficiency to peoples' lives, while helping at the same time to save energy and operating costs. Bosch is now pressing ahead with beacon projects in 14 different major cities.

### **San Leandro: smart streetlights**

In the city of San Leandro, near San Francisco, Bosch has installed smart street lighting. The company equipped some 5,000 streetlights with smart LED lighting and a remote management platform for the system. Thanks to this design, the lights only turn on when they are actually needed. As a result, Bosch has helped San Leandro save energy as well as money – up to 7 million euros over the next 15 years. With the help of Bosch sensors, it is also possible to measure and evaluate air quality in the city of around 100,000 people. Smart cameras monitor traffic and can independently divert drivers if there is congestion.

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### **Tianjin: Bosch to make the Chinese city smart**

In June 2017, Bosch signed a strategic partnership agreement with the Chinese seaport of Tianjin. China is planning to establish an international metropolitan region around the Beijing-Tianjin-Hebei delta. With more than 15 million inhabitants, Tianjin is an industrial center and a key traffic hub for this zone. The goal shared by Bosch and city officials is to jointly carry out the “Smart Tianjin” initiative, which aims to convert Tianjin into a smart city. For this project, Bosch will draw on expertise it has gained from other smart-city projects already under way. They include urban projects in Singapore, San Francisco, Stuttgart, Berlin, and the Hamburg docks. With sensors, software, and services, Bosch is well positioned as an innovative IoT company to assist China on its journey into the age of smart cities. Bosch will tailor its solutions to the city’s needs. The pilot project will serve as a blueprint for further projects in China. In order to be closer to the client, the company plans to establish a local project office.

### **Bosch smart-city solutions for mobility, energy, buildings, safety, security, and e-governance**

For smart cities, Bosch offers solutions in the areas of mobility, energy, buildings, safety, security, and e-governance – in other words, digital city administration. With regard to mobility, these solutions include environmental monitoring, connected parking, fleet management, e-mobility, and multimodal transport, which is the linking of different modes of transport. When it comes to energy, the range includes virtual power plants, energy-efficient heating, hot-water and air-conditioning systems, as well as energy storage units. The safety and security solutions encompass systems for fire protection, access control, and video surveillance. With [smart-hospital](#) solutions, Bosch relieves the burden on both hospital operators and staff when it comes to technical and administrative duties. For residential buildings, Bosch provides smart-home technology and connected household appliances.

Bosch will also be presenting smart-city solutions at the CES 2018 (January 9–12) in Las Vegas.

### **EXPERIENCE BOSCH AT CES 2018** in Las Vegas, Nevada, USA

The demand for safety, security, energy efficiency, and convenience in cities is growing. These are just a few of the challenges that are resulting from growing urbanization. The key to overcoming them is intelligent and connected – otherwise known as “smart” – cities. In many places, such cities are already a reality: Bosch has a multitude of solutions that are helping to make cities smarter and increase quality of life for their inhabitants. At CES 2018, Bosch is showcasing an expanded portfolio of “simply.connected.” solutions for everything

from urban mobility and the connected working world to intelligent homes and buildings.

### **BOSCH PRESS CONFERENCE**

Monday, January 8, 2018, 8:00–9:00 a.m. (local time) with Dr. Markus Heyn, member of the board of management of Robert Bosch GmbH, at Mandalay Bay Hotel, South Convention Center, Ballrooms BCD.

### **BOSCH BOOTH**

Tuesday to Friday, January 9–12, 2018, in the Central Hall, booth #14028

**FOLLOW** the Bosch CES 2018 highlights on Twitter: #BoschCES

**PANELS WITH BOSCH EXPERTS:** More information to come – stay tuned!

### **Contact person for press inquiries:**

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January 7, 2018

## **CES® 2018 Innovation Award: Bosch smart city solution Climo helps to manage air quality**

**Tiny box provides comprehensive real-time data at a fraction of the cost**

- ▶ Climo measures air quality in city of Las Vegas during CES 2018
- ▶ Intelligent data helps cities to take action on air pollution
- ▶ Ambient air quality a key objective for urban environmental planning
- ▶ Connected solution honored in the Smart Cities category
- ▶ Climo is one of multiple smart city solutions presented by Bosch at CES 2018

**LAS VEGAS** – Thanks to smart city technology, cities can now take action on the topic of air pollution. A first step towards improving air quality is the provision and management of data. At CES 2018, Bosch is presenting its micro-climate monitoring system Climo – a new solution, which helps cities around the world manage air-quality parameters in real time and at a much lower cost than existing technologies. The tiny box enables rapid and accurate measurement of data. It has been honored with a CES 2018 Innovation Award in the Smart Cities category. During CES 2018, Climo is monitoring air quality in the city of Las Vegas.

“Sensors throughout the city provide a variety of valuable data. Climo gives cities quicker and easier access to this data, allowing them to take action on air quality,” said Mike Mansuetti, president of Bosch in North America at CES 2018. “The Bosch portfolio of sensors, software and services – combined with a wealth of cross-domain expertise – position us to be a partner for cities to solve challenges and positively impact quality of life of its inhabitants.”

The Climo system, developed by Bosch in collaboration with [Intel](#), enables the rapid and accurate measurement of air-quality parameters. It combines sensors and software to deliver a range of air-quality data, covering key air pollutants including: particulate matter, carbon monoxide, nitric oxide, nitrogen dioxide,

sulphur dioxide and ozone. It also provides data from environmental parameters such as temperature, relative humidity, light, sound, pressure – and even pollen.

### **Benefits for citizens in real time**

Ambient air quality is a key objective for urban environmental planning. The data provided by the Climo system can be utilized by cities in a variety of proactive approaches such as traffic-flow management. It can also serve to proactively message the local population with tips and information. For example, citizens who are asthmatic or suffer from allergies can instantly know whether it is better to stay indoors or avoid a certain part of the city. It is also a source of data generation for cities to make other decisions, such as future policy and planning. In rural or park areas, the system can also provide an early warning for fires.

### **Wireless sensors that can connect over Wi-Fi and cellular networks**

The ability to enable micro-climate data collection comes via the connection of compact wireless sensors. Secure remote calibration and monitoring is enabled through both wireless (Wi-Fi and 3G) as well as a wired connection. The Climo system is powered with Intel IoT technologies and features cloud-based analytics, data management and visualization software.

Units are pre-configured by location and can be further configured using over-the-air updates. The easy update capabilities are part of the Climo design to scale with future technologies, such as 5G, as they become available.

### **Hundred times smaller, ten times more cost-effective**

While air-quality monitoring systems can often require large infrastructure investments and are complex to operate, the Climo system was designed for simple deployment and management. It measures 1/100<sup>th</sup> the size and 1/10<sup>th</sup> the cost of a traditional air quality monitoring system. Climo was designed to withstand a variety of weather conditions. Climo units feature options for power via either 110/220 V or 12V DC. This makes it an interesting solution for cities and countries around the globe – in different weather zones and with different economic environment. Originally, it was developed by Bosch engineers in India.

### **Real time data of air quality in Las Vegas during CES 2018**

At CES Unveiled in Las Vegas, Bosch will present a live demonstration utilizing Climo that shows air-quality measurements from cities around the world – including Las Vegas. It will also show an updated management interface for Climo that provides an even more comprehensive view for city officials.

## **Bosch at CES 2018:**

- **PRESS CONFERENCE:** In Ballrooms B, C, and D, Mandalay Bay Hotel, Las Vegas **South Convention Center, Level 2**, from **8:00 to 8:45 a.m. local time on Monday, January 8, 2018.**
- **BOOTH:** **Tuesday to Friday, January 9–12, 2018**, in the Central Hall, booth #14028
- **FOLLOW** the Bosch CES 2018 highlights on Twitter: **#BoschCES**
- **PANELS WITH BOSCH EXPERTS:**
  - **Tuesday, January 9, 1:30 – 3:15 p.m.** (local time)  
“[Connect2Car: Next-Gen Automobility](#)” session with Kay Stepper, Vice President of Bosch in North America, head of driver assistance and automated driving,  
Las Vegas, Convention Center, North Hall, N256
  - **Wednesday, January 10, 2018, 1:45–2:30 p.m.** (local time)  
“[Connected Vehicles in Connected Ecosystems](#)” session with Mike Mansueti, President Bosch North America,  
Smart Cities Conference, Westgate.
  - **Thursday, January 11, 2018, 11:30 a.m to 12:30 p.m.** (local time)  
“[The Future of Robots at Work and Home](#)” session with Phil Roan, Senior Engineer Robotics, BSH Hausgeräte GmbH,  
Las Vegas Convention Center, North Hall, N258

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## **About Bosch**

*The Bosch Group is a leading global supplier of technology and services. The company employs roughly 390,000 associates worldwide (as of December 31, 2016) and generated sales of 73.1 billion euros (\$80.9 billion) in 2016. Its operations are divided into four business sectors: Mobility Solutions, Industrial Technology, Consumer Goods, and Energy and Building Technology. As a leading IoT company, Bosch offers innovative solutions for smart homes, smart cities, connected mobility, and connected industry. It uses its expertise in sensor technology, software, and services, as well as its own IoT cloud, to offer its customers connected, cross-domain solutions from a single source. The Bosch Group's strategic objective is to create solutions for a connected life, and to improve quality of life worldwide with products and services that are innovative and spark enthusiasm. In short, Bosch creates technology that is "Invented for life." The Bosch Group comprises Robert Bosch GmbH and its roughly 440 subsidiaries and regional companies in some 60 countries. Including sales and service partners, Bosch's global manufacturing, engineering, and sales network covers nearly every country in the world. The basis for the company's future growth is its innovative strength. At 120 locations across the globe, Bosch employs 59,000 associates in research and development.*

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Exchange rate: 1 EUR = \$1.1069

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# Press release

## Energy and Building Technology



**BOSCH**

### “Attention OR: helicopter landing!” Bosch is making hospitals smart

October 5, 2017  
PI 9806 RB bj/af

- ▶ Connected solutions for greater safety, convenience, and efficiency in hospitals
- ▶ Operators, staff, and patients benefit from connected services
- ▶ Bosch expects smart hospitals to generate sales of 100 million euros
- ▶ Energy and Building Technology business sector to grow by around five percent in 2017

Cologne / Stuttgart, Germany – Preventing the theft of expensive medical equipment, stopping unauthorized persons from entering restricted areas, and informing the OR of a rescue helicopter’s arrival: with the help of intelligently connected cameras, video technology, and much more, things that used to be impossible at hospitals – or were only possible as stand-alone, non-digital solutions – are now child’s play thanks to Bosch’s internet of things (IoT) expertise. According to the insurance industry, the theft of endoscopic devices results in millions of euros in damages for hospital operators throughout Europe. Sensor-based video technology in corridors and at points of entry and exit can provide crucial evidence for prosecuting criminals. Prevention is equally important. Intelligently controlled lighting, connected motion detectors on doors and windows, and intrusion alarm systems scare off burglars, prevent theft, and save operators the high cost of having to replace expensive medical equipment. “The internet of things has finally arrived at hospitals,” Dr. Stefan Hartung, the member of the board of management responsible for the Energy and Building Technology business sector at Bosch, said at a press conference. Safety and security are not the only benefits, he added: connected solutions also provide greater convenience and efficiency in hospitals. Bosch plans to generate sales of around 100 million euros with smart hospital projects in the years ahead. For the entire Energy and Building Technology business sector, Bosch expects sales growth of around five percent this year, more than double the sector’s growth rate last year.

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### **Contributing to hospitals' digitalization strategies**

According to a study by Roland Berger, almost 90 percent of all hospitals have developed a digitalization strategy to increase their efficiency and economic performance – and infrastructure is no exception. “We would like to benefit from these ambitions, which is why we will expand our business activities in the field of connected products and services for hospitals. Through our intelligent solutions, we want to make a contribution to greater quality of life, safety, and security at hospitals, as well as to greater resource conservation,” Hartung said.

### **Bosch: a service provider for smart hospitals**

Hospitals are under tremendous pressure. They have to function smoothly 24 hours a day, 365 days a year. Under constantly rising cost pressure, doctors and nurses have to care for patients, people and valuable equipment also have to be protected, and technical infrastructure has to be managed optimally. With smart hospital solutions, Bosch relieves the burden on hospital operators and staff when it comes to technical and administrative duties. Patients also benefit from new, connected services in their hospital rooms, such as interactive infotainment systems.

### **Connected control center at University Hospital in Munich**

At the Rechts der Isar hospital in Munich, one of Germany's largest medical centers, a connected control center ensures an optimal overview of the hospital's safety-relevant processes. From there, employees can monitor gates, intercoms, and the installed video cameras. Four multi-picture-display monitors make it possible to keep an eye on 34 clinics and departments. The system is also used to control safety-relevant access points. In addition, connected cameras and monitors register the landing of rescue helicopters, notify the OR directly of their arrival, and inform the relevant members of staff. To enable these new functions, Bosch has added internet capabilities to existing, non-digital surveillance cameras and networked them to create a single system, saving the cost of having to buy more than 70 cameras, cutting the facility's operating costs, and reducing the burden on employees.

### **Climatec: a long-standing partner in the U.S.**

In North America, the Bosch subsidiary Climatec is a long-standing partner of Banner Health. With 29 facilities in seven states, Banner Health is one of the largest non-profit healthcare providers in the U.S. Bosch plans, develops, and integrates solutions in new and retrofitted hospitals for this customer. At 15 Banner facilities, Bosch provides building automation, air conditioning, and fire

detection equipment, as well as nurse-call and infotainment systems for patients – integrated, connected, and from a single source. The goal is to use connected solutions to create comfortable environments for providing medical care to patients that are also economical and reliable.

### **NH hospital in Bangalore benefits from lower energy costs**

Since December 2016, Bosch has been an energy partner for a 750-bed cancer treatment center in Bangalore, India, which handles around 390,000 patients a year. The facility is part of the Narayana Hrudayalaya (NH) chain. With 30 hospitals at 18 locations, NH is one of the largest healthcare providers in India. At the heart of the project is a sensor- and software-based energy solution that will ensure a high degree of energy efficiency in the long term while guaranteeing outstanding convenience and comfort for patients and staff. Bosch is also supporting facility management in its day-to-day work with an innovative energy management and monitoring system, allowing the facility to cut costs by around twelve percent compared to its previous expenses. Staff members can use their smartphones, tablets, and desktop computers to access energy data at any time and react immediately to irregularities.

### **Indoor positioning can save lives**

Together with other partners, Bosch is dedicated to developing additional IoT-based services for the hospital sector. In emergencies, smart indoor solutions can make it possible to locate urgently needed medical equipment, for example, and transport it to certain areas of a hospital. Indoor positioning works by equipping essential medical equipment or other objects with sensors. Using sensor technology, they transmit their position or condition (such as their battery status) in real time via an internal network or a cloud to doctors and nursing staff. Such solutions speed up processes at hospitals and can even save lives – because in an emergency, every second counts.

**Press photos:** #1212134, #1212135, #1212133

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## **A smart city in China: Bosch to make Tianjin intelligent**

### **Strategic cooperation agreed**

June 20, 2017

PI 9718 RB Gri/KB

Frankfurt, Germany – The Bosch Group is to be part of one of China’s pioneering smart-city projects: on June 20, the leading global supplier of technology and services signed a strategic cooperation framework agreement with the city of Tianjin. The aim of the alliance is to explore possibilities for putting the “Smart Tianjin” initiative into practice. The Chinese port is to be made into a smart city.

Attending the signing ceremony, which took place during the Tianjin-Frankfurt Cooperation Forum, Peter Tyroller, the member of the board of management of Robert Bosch GmbH responsible for Asia Pacific, said: “China’s new urbanization has put smart-city solutions on the map as one of the key drivers of urban development. Cities need to provide increasing levels of convenience, energy efficiency, and security. We are pleased to have the opportunity to offer Tianjin our connected solutions as a way of improving quality of life and creating an economically more efficient city.” With the sensors, software, and services the Bosch Group provides as an innovation-driven IoT company, it is well positioned to help take China into the smart-city era.

#### **Tailor-made solutions for the needs of “Smart Tianjin”**

In the rough triangle encompassing Beijing, Tianjin, and Hebei province, China is planning an international metropolitan area. With more than 15 million inhabitants, Tianjin will be an important industrial center and transport hub within this area. With this in mind, the Tianjin municipal government has set up a “Smart Tianjin” initiative. As part of this initiative, Bosch will design a smart-city blueprint for Tianjin, sharing and leveraging experience accumulated in other international smart-city projects, and taking local needs into consideration. To be closer to its client, Bosch will set up a project office in Tianjin.

## **Bosch smart-city solutions for mobility, energy, buildings, security, and e-governance**

Bosch will contribute the know-how it has gained so far from other smart-city projects, including Singapore, San Francisco, Stuttgart, Berlin, and the Hamburg docks. For smart cities, Bosch offers solutions in the areas of mobility, energy, buildings, security, and e-governance – in other words, digital city administration. In the mobility sphere, its solutions include environmental monitoring, connected parking, fleet management, e-mobility, and multimodal transport. When it comes to energy, the range includes virtual power plants, energy-efficient heating, hot water, and cooling systems, as well as energy storage units. The security solutions encompass systems for fire protection, access control, and video surveillance. For residential buildings, Bosch provides smart home technology and connected household appliances. As for e-governance, the range includes the community app and the city data platform.

## **Bosch in China**

In 2016, the Bosch Group recorded sales of 12.5 billion euros in China. This means that the supplier of technology and services increased its sales by 12 percent year on year, a rise of 19 percent in local currency. With some 59,000 associates, China is also home to Bosch's largest workforce outside Germany. Bosch has been active in China since 1909, and all four of its business sectors are now represented there. The Bosch Group also sees great potential in China for its business with IoT connectivity – not only in the area of smart cities, but also in the fields of connected mobility and the industrial internet.

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*In China, the Bosch Group manufactures and markets automotive original equipment and aftermarket products, industrial drives and control technology, packaging technology, power tools, security and communication systems, thermotechnology, household appliances. Having established a regional presence in China in 1909, Bosch employs close to 59,000 associates (as of December 31, 2016) and operates 62 legal entities and facilities, with consolidated sales of CNY 91.5 billion in fiscal 2016.*

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