



**BOSCH**

Invented for life

Solutions for the  
automotive industry

[bosch.com/automotive](https://www.bosch.com/automotive)

Secure. Reliable. Automated.





## Bosch solutions for the automotive industry





When you choose Bosch as a supplier of energy and building products and solutions for the automotive industry, you can be assured of cutting-edge technologies from a global provider. True to our company slogan "Invented for life", our products and solutions are designed with our customers in mind. As a leading global supplier of technology and services, Bosch understands that professionals need to be able to rely on their industry partners for technical expertise and innovative thinking.

Bosch provides a comprehensive range of products and solutions for the automotive industry across the world, has a choice of products that are commonplace across the industry requirements, whether it is energy-efficient heating and hot-water systems, complete production lines or a comprehensive security system for the premises.



# All solutions for the automotive manufacturing

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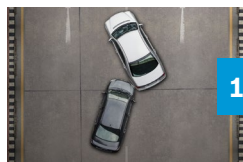
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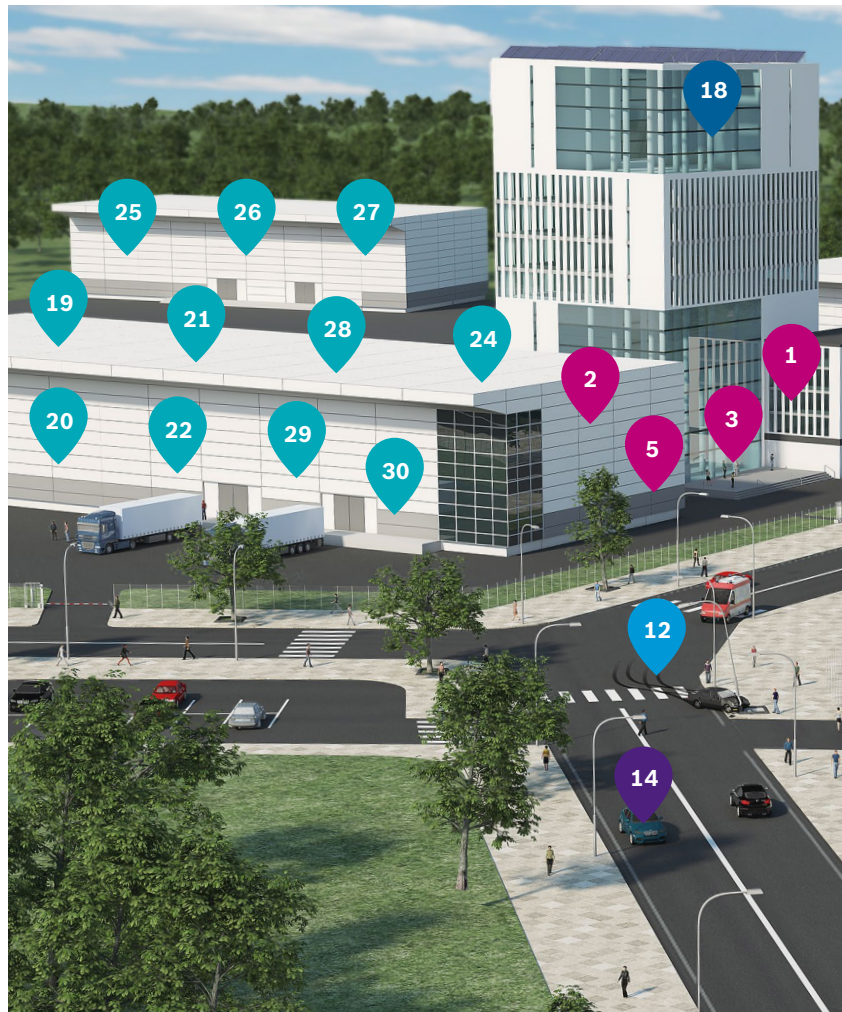
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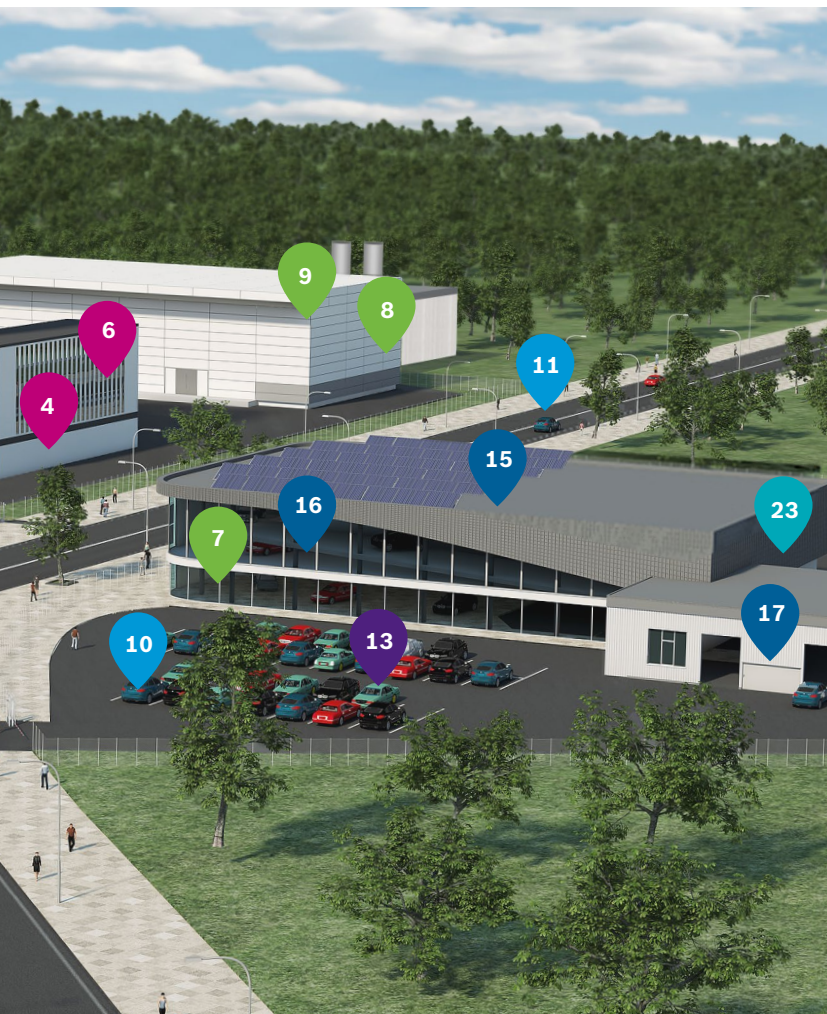
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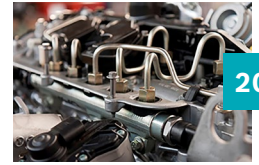


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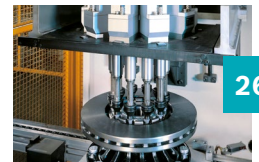
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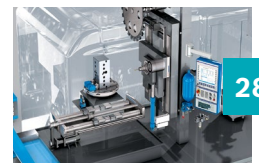
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# Security and life safety

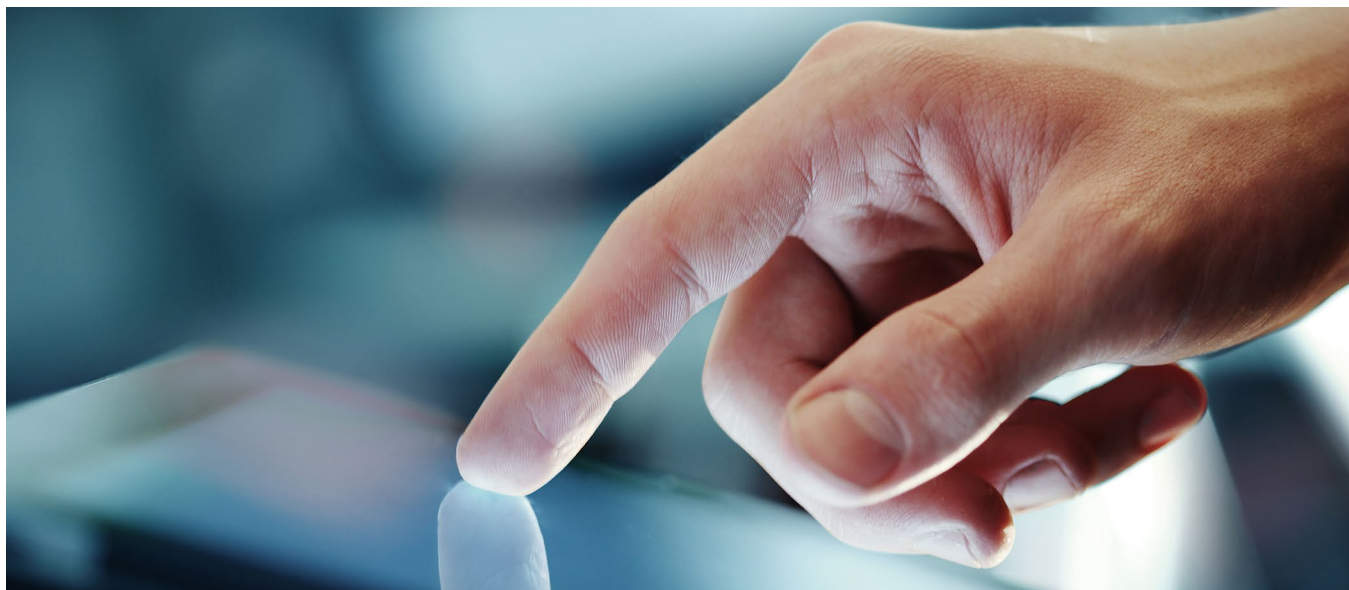
The safety requirements for infrastructures and buildings are increasing worldwide. The goal: People and values are protected as much as possible. Trust the Bosch long-standing expertise in consulting, planning, implementing and operating your individual security and life safety solution.

## Benefits

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- + Minimize risks, maximize security: no matter what your security task looks like, Bosch offers the best solution for every building.
- + Bosch offers comprehensive services and consultancy for monitoring, maintenance, modernization, and operation as well as attractive and flexible rental and operator models.
- + Bosch assists in all project phases and finds therefore the best solution for you: Planning, realization and operation complement each other perfectly, creating maximum security.

Bosch implements special requirements for a safe, economic, and comfortable building and offers a broad spectrum of services for it: from video surveillance, access control, fire-, evacuation-, and speech-alarm systems, robbery and break-in notification systems via networked time and building management systems, up to energy solutions. As an installer, service provider and consultant, Bosch supports in multifaceted challenges and provides customers with networked and intelligent overall solutions for safety and security from a single source. The Bosch experts have specific industry expertise and create individual solutions with future-oriented products and services that always focuses on the customers needs and requirements.





# Fire alarm and voice evacuation systems

The Bosch portfolio covers the most reliable systems that include fire sensors, voice evacuation and control software to quickly locate, detect, verify and to contain fires. The systems are comprehensive, tailor-made solutions for almost any project. They fulfill and even exceed aesthetic standards and market requirements.

The Bosch systems quickly and accurately locate a fire and trigger evacuation. At the same time, they minimize the occurrence of false alarms. The public address system allows the operator to guide employees to safety, avoiding danger areas. Surveillance cameras can monitor evacuation proceedings and help the authorities coordinate rescue operations. All these systems incorporate high levels of redundancy and can be integrated centrally using the Bosch building integration system to ensure seamless operation under any contingency.

## Benefits

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- + Superior fire protection with intelligent solutions
- + Advanced public address and voice evacuation systems
- + Solutions range from simple installations to highly complex applications





# Video systems

In the automotive industry, video surveillance cameras can be of great use. With the introduction of IP cameras and built-in intelligence, Bosch enables cars to become even safer.



With the video security portfolio, Bosch offers a wide variety of both fixed and moving cameras, different form factors and excellent image quality. Moreover, all cameras as of the IP 4000 series have video analytics at the edge built-in as a standard. These cameras can even be used for more than only security: for example, they can support autonomous driving and increase safety in the automotive industry.

## Benefits

- + Video analytics built-in as standard as of the IP 4000 cameras
- + Reduce bitrate up to 80% and save storage costs without compromising video quality
- + Integrated hardware and software measures to keep video data secure, such as a built in trusted platform module



# Intrusion alarm systems

From single applications to extensive projects, Bosch provides solutions that are fully integrated and meet the highest security standards. The Bosch detectors and panels offer a finely-tuned balance between quick response to real security breaches and ignoring costly false alarm triggers.



Hostile acts or vandalism on the manufacturing premises or in the factory can have severe consequences. Bosch systems enable early detection of suspicious behavior and help to confirm and validate alarms. In combination with intelligent video analysis, Bosch cameras establish a “virtual perimeter fence” that, if crossed, alerts a security operator. Cameras can then be used to check on the situation at any time of the day or night and initiate the appropriate action.

## Benefits

- + Portfolio covers panels, detectors, communicators and accessories
- + Scalable intrusion solutions for various needs
- + Reliable intrusion detection with decades of experience

**boschsecurity.com**

Solution provided by: Bosch Building Technologies



# Access control systems

Bosch offers integrated systems for many different applications to protect staff from uninvited guests and businesses from property and information theft.



## Benefits

- + Complete Bosch access control solution covering software, controllers and a variety of readers and credentials
- + Comprehensive system with many features and possible integration with third-party devices
- + Easy to install and maintain thanks to its modular concept

The access control systems guarantee reliable access management both indoors and outdoors, such as access to production or R&D facilities. State-of-the-art readers and controllers restrict access to non-public areas such as equipment and locker rooms. This ensures that only authorized individuals get in. Video cameras are located in the vicinity monitor and observe any unauthorized access attempts.



# Management software

Bosch management software is specialized in complex enterprise solutions. The management software portfolio covers video and alarm management such as the building integration system or the Bosch video management system. The Bosch building integration system offers a tool box to allow integration with third party applications via open standards (OPC, ONVIF, OSDP) and software development kits.



The building integration system provides a single web-based control point for monitoring all security, safety, and facility management systems. This includes alarm management, fast alarm identification via location maps and follow-up procedures. It seamlessly integrates fire and intrusion alarms, evacuation, access control, video surveillance and building automation systems into a single platform. The building integration system enables a single operator to monitor and control all security systems, as well as to respond faster to emergencies and achieve greater overall effectiveness. The Bosch video management system provides seamless management of digital video, audio and data across an IP network.

## Benefits

- + Seamless integration of all Bosch safety and security subsystems as well as third party applications via SDK and open interfaces
- + Easy to operate, increasing operator efficiency, and allowing for a faster emergency response
- + One complete solution to enhance security, including a fully embedded access control

**boschsecurity.com**

Solution provided by: Bosch Building Technologies

# Energy services

Global energy consumption is continuously increasing and buildings are the number one consumer of energy. Bosch's energy services contribute to enhance energy efficiency, saving operating costs and reducing the carbon footprint.

With a combination of customized system solutions, services and modern technology, Bosch provides a comprehensive portfolio on energy services. All measures are always perfectly matched in order to save energy and operating costs. The Bosch range of services comprises energy analysis, planning and implementation of supply solutions and efficient long-term operation of energy systems.

## Benefits

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- + Increasing energy efficiency, reducing operating costs – Bosch develops tailor-made and future-proof energy solutions for buildings.
- + An attractive business model ensures that Bosch is a reliable long-term energy partner.
- + Bosch assists in all project phases and can therefore find the best solution for the customer: Analysis, planning, installation and operation complement each other perfectly, creating maximum efficiency.





# Energy-efficient heating, domestic hot water solutions and cogeneration

Bosch's modular and comprehensive product portfolio provides the optimum solution meeting the specific requirements of each building – no matter if office complexes, production facilities or warehouses. Key benefits of Bosch systems are outstanding efficiency, reliability and innovative control systems.

## Benefits

- + Maximum reliability of heating and hot water supply by using different energy sources. Integration of renewable energies for a carbon footprint that sets an example in ecological terms.
- + Intelligent controls balance the different energy sources in the most cost and energy effective way. Secure remote access allows the personnel to monitor the plant anywhere and anytime to make use of the remote support of a Bosch service engineer if required.
- + Bosch's modular product portfolio enables quick installation, low cost of ownership and high reliability. Experienced Bosch experts support along the whole product life cycle – from planning, to commissioning to 24/7 support and remote connectivity.

Modern building complexes comprehend decentral power generation with CHP's. This can save up to 76% on electricity bills and reduces the building's carbon footprint significantly. CHP isolated solutions provide electricity also during power blackouts, e.g. for critical systems, servers, lighting, and ventilation. Surplus heat from the cogeneration is used for heating and domestic hot water. Efficient heating boilers cover peak loads with up to 110% efficiency and are supported by solar thermal systems.



# Process heat: Steam and hot water boiler systems

Production in the automotive industry comprises many energy-intensive processes. Energy cost reduction is a crucial factor to competitiveness. Bosch's industrial's system solutions provide a uniquely high efficiency that enable extremely short payback times. Since many decades, the global players of the automotive industry are using the Bosch energy solutions.



## Benefits

- + Reliable and cost-effective generation of process heat reduces CO<sub>2</sub> emissions and energy costs. Intelligent controls and innovative automation technology ensure flexibility of operation tailored to the production's requirements.
- + Decentral power generation provides electricity at low costs and with minimum CO<sub>2</sub> emissions. Waste heat from cogeneration (CHP) can be used for production processes or heating purposes. CHP island solutions provide electricity also during power blackouts, e.g. for critical systems, servers, lighting, and ventilation.
- + Bosch's modular product portfolio enables quick installation, low cost of ownership, and high reliability. Experienced Bosch experts support along the whole product life cycle – from planning to commissioning to 24/7 support and remote connectivity.

## Steam and hot water boiler systems

Most of the production steps in the automotive industry require process heat in the form of steam, e.g. for the processing of raw material or the required cleaning. This being the case, the generation of the required process heat has a huge influence on the energy-efficiency of the production.

Further, maximum availability is crucial in order to avoid costly production downtimes. The high efficiency and reliability of Bosch's process heat solutions thus help maximizing productivity and profitability.

**[bosch-industrial.com](https://www.bosch-industrial.com)**

Solution provided by: Bosch Thermotechnology



# Concierge service

The concierge service is a 24/7 personal assistant for any driver, guiding him through the day and facilitating everyday life. The service saves time for the driver, takes the stress of dealing with multiple tasks at a time and, last but not least, makes driving safer.



The concierge service eliminates the need to stop on the road to search for addresses, book hotels, make restaurant reservations, or deal with other admin. The service is personal and efficient, which means drivers won't be frustrated with electronic voice options or endlessly click through long menus, and will be able to focus on the road ahead. It saves the driver time and contributes to road safety. The service runs around the clock in the driver's native language no matter where he/she is. Call center agents work with an extensive real time content client to guarantee up to date information in a fast and smooth manner.

## Benefits

- + Instant connection to the car allows Bosch to identify the vehicle's position to introduce a target address and to transfer it to the car as a POI. The agent may draw routes with several POIs and send them to the car.
- + The concierge service is PCI compliant allowing us to make direct payments in the name of the driver and thus save him time and reduce stress throughout the day.
- + Concierge enquiries are continuously evaluated so customers can fully benefit from Bosch's experience. It also allows Bosch to enhance the service with additional content the driver did not even think of.



# Stolen vehicle tracking

The stolen vehicle tracking service sharply increases the chance of recovering a stolen vehicle through close cooperation with police and/or intervention partners. Bosch's IT back end in connection with its worldwide agent hotline establishes the vehicle tracking function and communicates the current vehicle position to the police in order to recover the vehicle. The service functions 24/7.



The service does not stop at transferring the necessary data to the police or intervention team, but, if required, it also offers further support to the driver such as the arrangement of a rental car, insurance claim management and further concierge services. Bosch strives to offer the best service in the market and is working on providing an encompassing and global SVT/SVR partner network to further reduce monetary as well as stress damages to all drivers and car owners. The hybrid IT setup offers flexibility to adapt the processes to specific demands (automatic alert vs. contact by vehicle owner, specific national requirements).

## Benefits

- + Experienced agents assist the vehicle owner in a critical situation, not only supporting him/her with the information he/she needs and assisting him/her getting in contact with the relevant authorities (e.g. police) but also caring for the owner's further needs caused by the loss of his/her own vehicle.
- + The IT backend establishes the vehicle tracking function and Bosch agents communicate the current vehicle position to the police – tracking the vehicle at intervals specified by the police.
- + Web-access allows the police to see the live position of the vehicle for most convenient car recovery.

**[boschservicesolutions.com](https://www.boschservicesolutions.com)**

Solution provided by: Bosch Service Solutions



# eCall – emergency call

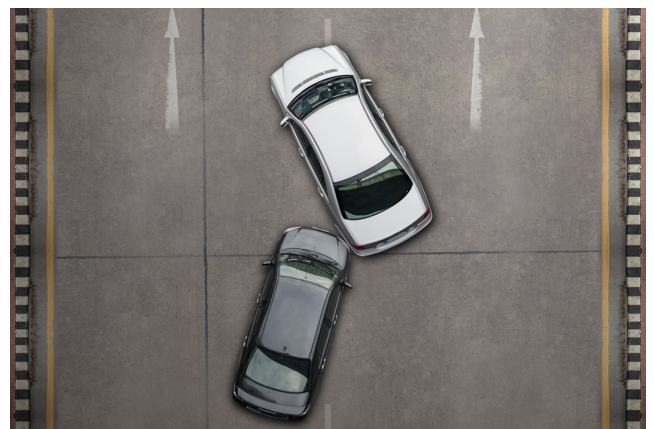
The eCall is an emergency call generated either manually by the driver or automatically via a vehicle sensor when an accident occurs. When activated, the system establishes a voice connection to an agent speaking the language set in the headunit of the car and simultaneously provides the agent with a set of data about the accident. Based on this, the agent informs the relevant rescue services in the local language, provides assistance to the driver and remains in contact with the driver until the rescue team arrives. The service functions 24/7.



Since 2012, the eCall has been implemented by several OEMs for which Bosch provides the agent based services – at present in 20 languages in more than 45 countries worldwide. Thanks to the flexible IT infrastructure, Bosch guarantees a fast adaption of additional features and best practices across borders. Next to the minimum set of data required by the EU (vehicle location & direction, time stamp, vehicle ID, fuel type, message identifier & format version and control), Bosch manages an advanced set of data (i.e. driver's language, number of passengers and number of airbag deployments), in order to offer the most efficient service for all parties involved.

## Benefits

- + Multilingual eCall processing with an automatic connection from the vehicle to a service center (data and voice) and the respective handling in the language of the driver, independently of his location worldwide
- + Notification of local rescue services in the local language through an PSAP database developed in-house, which is constantly updated in close cooperation with public authorities in the respective states and countries
- + Contracted volume of 12 million cars to be served in almost 50 countries and 20 languages by 2020 makes Bosch the go to partner for agent based services worldwide



# Automated valet parking

As a pioneer of automated mobility, Bosch has developed a driverless system that employs connected technology to save drivers not just the wearisome search for a parking space, but also the parking maneuver itself. Thanks to automated valet parking, every experience begins more convenient – whether it's flying off on holiday or going to a concert. Therefore, the driver simply drops off the vehicle at the drop-off area. Then the vehicle will be navigated to a free parking space with the help of the intelligent sensor technology.



## Benefits

- + Automated valet parking offers the car driver comfort and saving of time, as the vehicle takes over the driverless parking maneuver itself. Meanwhile, the driver can already proceed to his destination. Getting in and out of the vehicles takes place in comfortable and safe transfer areas. In addition, precise automated guidance eliminates the risk of incidents and damages while parking.
- + The car manufacturer can excite his customers with an innovative service. Thereby, he can increase the customer loyalty. New services and business models offer new sales potential. Through the first steps into the area of automated driving, the manufacturer can position himself as an innovative leader.

Automated valet parking is made possible by combining the intelligent sensor system supplied by Bosch with the automotive technology. The sensors, guiding the vehicle, are installed in the parking garage monitor, the driving corridor and its surroundings. Hereby, Bosch provides the system for both the parking provider and the car manufacturer.

The usage of the intelligent parking garage sensor systems automated driving. The intelligent infrastructure allows mixed traffic of automated and manual driving vehicles and passengers in the parking garage, hence, allowing an incremental implementation of automated valet parking vehicles.



**[bosch-mobility-solutions.com](https://www.bosch-mobility-solutions.com)**

Solution provided by: Connected Mobility Solutions



# Community-based parking

With community-based parking Bosch simplifies the search for free parking spaces in the cities. Thereby, car drivers will be navigated straight to the next free parking space. This happens with the help of the ultrasonic parking sensors of the cars which detect free parking spaces on the street. The received information will be processed in the cloud and provided to drivers seeking a parking space.

Community-based parking includes drivers actively seeking a parking space, as well as those who are simply making their way around the city. The transmitter vehicle identifies empty parking spaces on the street as it drives past them. This data is anonymized and sent to the cloud. There, it is collected, aggregated, and processed further into digital parking maps. Based on the processed data, the receiving vehicle is given precise information on where free parking spaces are. The required connectivity hardware and the ultrasonic parking sensors of the car are already widely spread and facilitate a realization of community-based parking based on the latest technology.



## Benefits

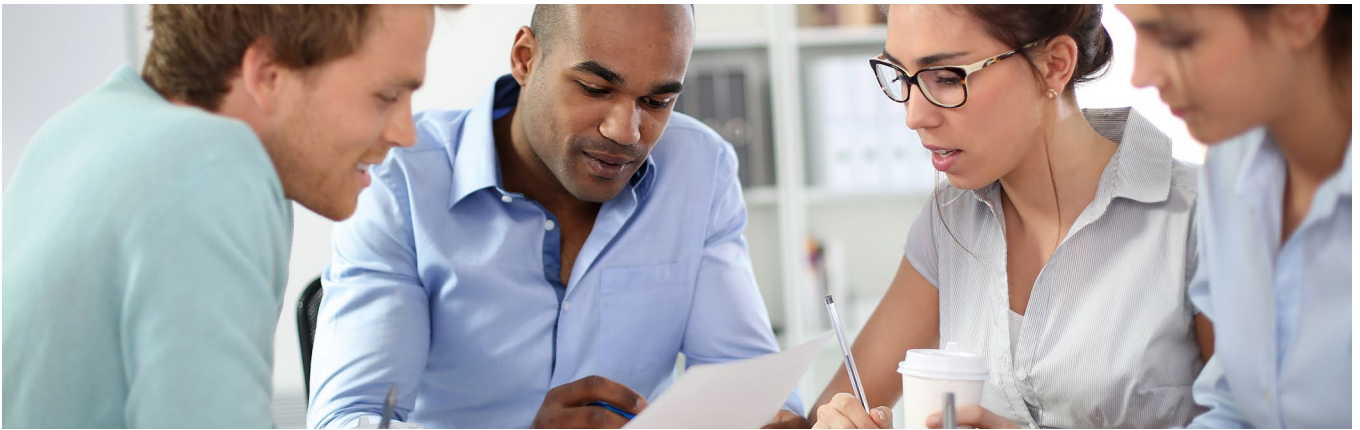
- + Community-based parking enables car drivers to drive directly and relaxed to a free parking space. Thereby, the drivers save time. Furthermore, the on-board instruments indicate specific parking spaces (e.g. E-charging stations or disabled parking spaces).
- + Thanks to community-based parking the traffic of searching for parking spaces decreases significantly. In addition, the environment benefits from the direct and shorter drive to a free parking space.
- + Car manufacturers can provide a service that takes the search for a parking lot out of the driver's hand. Therefore, they can increase their attractiveness and customer loyalty. New services and business models offer new sales potential. The provision and operation of the service will be done by Bosch. The application of a manufacturer comprehensive platform ensures real-time and purposeful parking information.

**bosch-mobility-solutions.com**

Solution provided by: Connected Mobility Solutions

# Energy and building solutions

As a reliable partner, Bosch provides connected and integrated solutions which make buildings safer, more comfortable and more efficient. The Bosch experts support as consultants, installers and service providers. They have an extensive expertise and integrated solutions based on the latest technologies. Bosch offers integrated solutions for building security, building automation and energy services. All of Bosch's services are provided from a single source: from consulting and planning across implementation to operation. This enables Bosch to comprehensively meet the customers' needs. Bosch is active at more than 60 locations in Europe, the U.S. and Asia Pacific, and more than 100,000 customers benefit from experts' know-how.



## Benefits

- + Due to Bosch's long-standing competence, buildings will be made fit for the future with a targeted approach and experienced staff.
- + Short distances, competent teams and local contacts ensure professional consultation, optimal project implementation and long-term on-site support.
- + Bosch offers integrated overall solutions and attractive financing and operating models, are optimally tailored to every individual requirement.

Scarce resources, climate change, urbanization, demographic shifts, digitalization, and demands for greater quality of life – the mega-issues of our time require major changes in the infrastructures and commercial buildings. The need for security, efficiency, and comfort is rising, as well as the demand for connected overall solutions. The Internet of Things is opening up many new possibilities and opportunities. Connectivity is bringing scores of new developments! One of it is that key areas of building services will be closely interconnected in the future. Leveraging and applying all the synergies in a sustainable way requires an integrated approach and course of action. Bosch has the essential areas of expertise needed to integrate all key aspects into a single solution. Bosch is focused on a clear vision – to be the number-one choice for the technologies and services that make buildings more secure, more comfortable and more efficient.

**[boschbuildingsolutions.com](https://www.boschbuildingsolutions.com)**

Solution provided by: Bosch Building Technologies



# Conference and discussion

The flagship digital congress network system enables the smooth conduct of even the most demanding meetings. Bosch offers award-winning, innovative industrial designs and state-of-the-art features, tailored for meetings of any size.



The Bosch system ensures a fast and flexible set-up with a choice of wired and wireless configurations. IR transmitters ensure that simultaneous interpretation is distributed solely to the participants for whom it is intended.

## Benefits

- + High speech intelligibility and natural sound
- + Full meeting control functionality
- + Enhanced security and reliability

**boschbuildingsolutions.com**  
Solution provided by: Bosch Building Technologies

# Professional power tools for trade and industry

A craftsman puts his heart and soul into his projects. Expectations are high: client requirements, appointments and construction challenges. That's what drives a professional to maintain high standards, deliver the best possible result and work with uncompromising efficiency. For that, skills and robust tools are needed. Bosch Professional offers the best support with innovative technologies and smart solutions. From planning and organizing to successful completion, Bosch provides an intelligent range of products and services with the quality to rely on.

Bosch professional power tools are engineered for excellence, meeting the highest standards in speed, precision and robustness for consistent, professional results. Therefore, Bosch Professional Power Tools is a competent partner for all craftsmen.



As one of the world's leading manufacturers of power tools and accessories, Bosch offers professionals virtually every tool they could ever need, from state-of-the-art lithium-ion cordless (battery-powered) to class-leading corded products. Bosch Professional Power Tools focuses on providing the trust a craftsman relies on when it comes to his tools and accessories.

Bosch power tools is consistently expanding its expertise in connected measuring and power tools for professionals: from 2017 onwards the new tools are available for trades-people, from laser measures with integrated Bluetooth modules to angle grinders, lights and drill drivers.

With these tools, Bosch is driving the trend of digitization and is offering professionals a system, from products to inventory management, that optimizes processes and enables all tradespeople to work more efficient.

**bosch-professional.com**

Solution provided by: Bosch Power Tools

## Benefits

- + Bosch provides services and consulting for all professional power tools and measuring tools beyond the legal warranty period. From online information to a dedicated team of trained customer service personnel.
- + Bosch ensures an excellent availability of spare parts and a fast turnaround time for warranty and chargeable repairs.



# Elevator emergency call – important modifications for operators

Technical standards and legal regulations make elevators the safest mean of transportation. The most important requirement specifies that emergency calls have to be passed onto a permanently staffed alarm receiving station. A new version of the industrial safety regulation states that all elevator systems transporting people need to be equipped with a two-way communication system. This is a challenge for operators.

The Bosch elevator emergency call combines fitting of emergency devices with the activation of emergency calls, so the operator can concentrate on his main business. The retrofitting of the required two-way communication system including its activation takes little time.

If trapped people trigger the emergency call, an immediate voice connection is established with the Bosch alarm receiving station. Agents calm the affected and organize their swift release. Bosch works with a nationwide network of intervention partners.

Furthermore, Bosch employees organize the repairs of the elevator. Every notification and event is documented for the elevator operator.



## Benefits

- + Bosch's network of intervention partners is one of the most effective in Germany. Due to the high amount of partners, trained security forces will quickly reach the site. With 50,000 monitored elevator systems, Bosch offers security for almost every system.
- + Bosch offers producer-independent and preconfigured emergency packages inclusive installation and the connection to the alarm receiving station for almost every kind of installation.
- + The technology can provide information on the operation status of other elements e.g. errors of the heating or air conditioning system, or the leakage of water and gas. Bosch's predictive maintenance services visualize the current conditions via a web portal. Potential breakdowns are detected early and repairs are initiated.

**boschservicesolutions.com**

Solution provided by: Bosch Service Solutions

# Vehicle configuration and test system

The introduction of electronic systems has had a major impact on automotive manufacturing. Vehicle technology continues to advance at an ever faster rate, while pressure to reduce vehicle-configuration and test times is increasing. For manufacturers, the challenge is to break new ground in test technology. Bosch is helping manufacturers to meet this challenge, working closely with them on their production lines.



Through the vehicle configuration and test system Bosch is able to provide innovative, efficient, and value-added solutions to some of the most complex manufacturing problems found in vehicle assembly plants.

The vehicle configuration and test system suite can be used throughout the manufacturing process to ensure quality at every stage. The Bosch vehicle configuration and test system suite consists of:

## Benefits

- + Test and measurement hardware to connect to the vehicle systems and sub-assemblies.
- + Software packages to link into manufacturing control systems and provide statistical quality reports for operators and management.
- + This unrivaled combination of sophisticated electrical test equipment and diagnostics capabilities is the key to improving efficiency at every stage of a vehicle's manufacture and development – whether configuring, testing, measuring, or reporting. Bosch's strong flash programming capability and concurrent channels with full bus loading technology ensures higher functionality and assured quality, at a lower cost but at greater speed. VCATS enables both static and dynamic testing via a suite of complementary products.

**bosch-automotive-aftermarket.com**

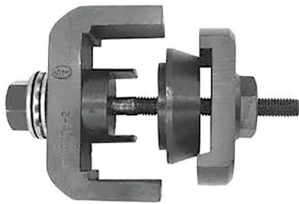
Solution provided by: Bosch Automotive Aftermarket



# Special tools for manufacturing

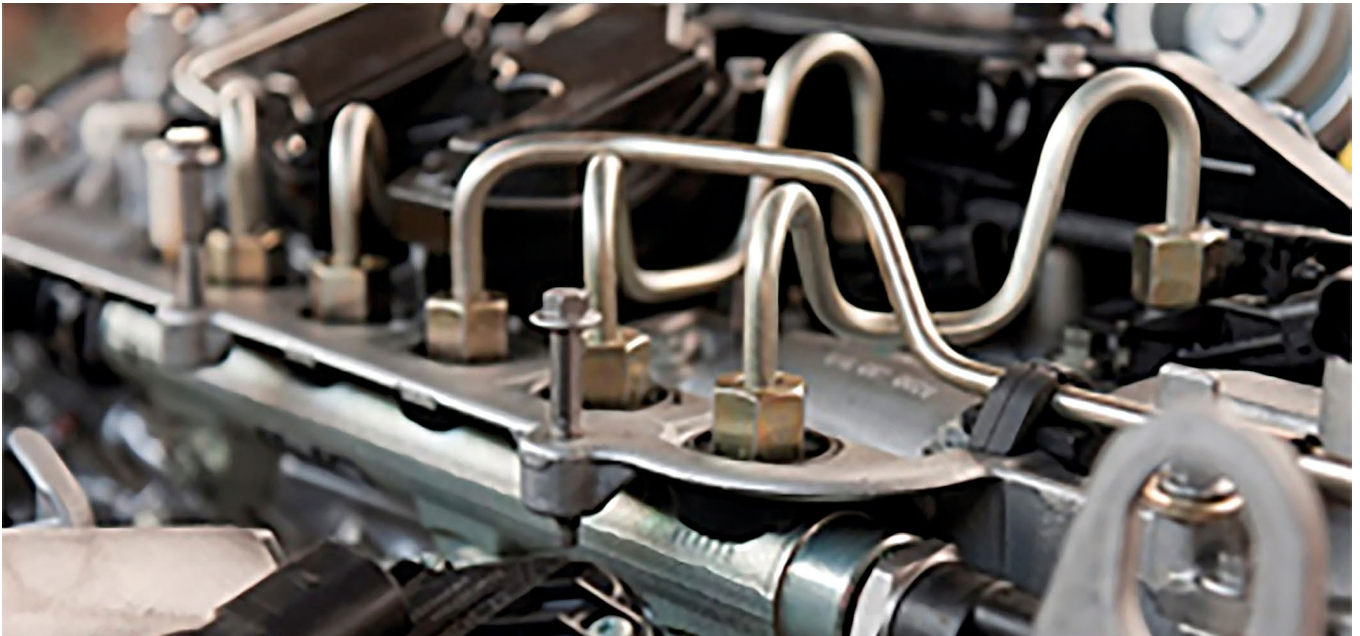
The complex nature and reduced installation space of modern vehicles gives rise to a specific set of challenges during the manufacturing process. Bosch uses the knowledge it has gained from many years of manufacturing and service operations support to provide assembly process-related solutions.

Special tools developed to support specific tasks can help reduce cycle time, reduce the risk of damage, alleviate strain on assembly personnel, and reduce the incidence of problems caused by incorrect fitment. Bosch can provide a full service to the manufacturer:



## Benefits

- + Tool design and concepts
- + Prototype development and testing
- + Certification and sign-off and Tool manufacturing (low to high volume)



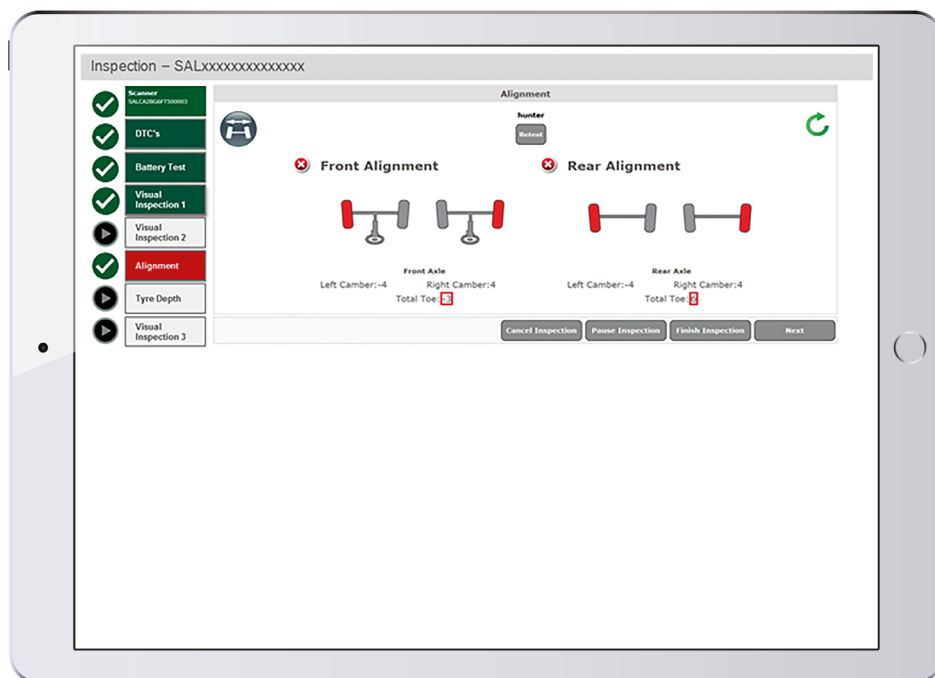
# Manufacturing conformance and quality support

Conformance and quality testing is an important part of the manufacturing process. Sample testing undertaken by the manufacturer provides an early warning of any issues that could prevent the sale of a vehicle.

Bosch provides state-of-the-art solutions that allow low-volume testing. Using software-driven integrated test equipment, Bosch can increase process efficiency while decreasing defects using a consistent machine driven process.

## Benefits

- + Automate aspects of the testing process
- + Reduce the testing cycle time
- + Ensure correct set-up and recording of results for multiple vehicle types and variants



**bosch-automotive-aftermarket.com**

Solution provided by: Bosch Automotive Aftermarket



# Manufacturing rectification delivery support

Bosch provides a full service offering for rectification and workshop support. The experience Bosch has gained from developing efficient workflow solutions, installing thousands of workshop bays and upskilling technicians can also be applied to the rectification area.



## Benefits

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- + Increasing throughput with managed quality levels
- + Consistency with flashing and after-sales processes
- + Integrated solutions that drive further efficiencies within the OEM environment.

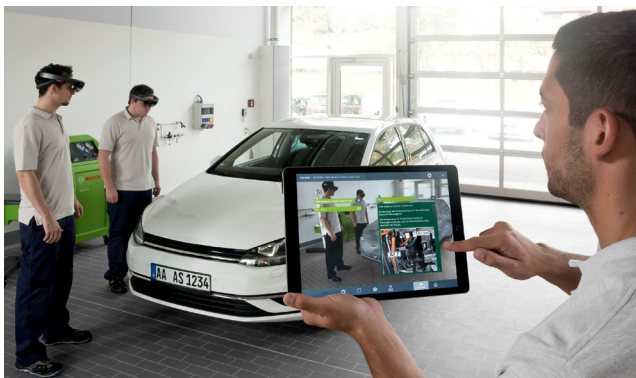
# Augmented reality:

## Common augmented reality platform

Augmented reality provides relevant information within context and exactly where users need them at the very moment. Bosch augmented reality applications accelerate manufacturing operations and support technical trainings. They help users understand complex tasks better and improve performance. Bosch augmented reality solutions are made to support use cases in manufacturing, service, training, and sales. With Bosch's common augmented reality platform, customers are now able to apply augmented reality in an industrialized manner.

Augmented reality with common augmented reality platform can now be applied to the full product portfolio of the customers with almost no limits. Product variants, updates or configuration options are not limiting. By publishing augmented reality content directly into the common augmented reality platform AR client, AR can now be created by technical authors, without programming needs. 3D engineering information can effectively be transferred into value generating augmented reality experience and managed throughout the full product lifecycle.

The common augmented reality platform integrates 3D authoring and XML authoring, data management and augmented reality publication in one powerful information platform. Interfaces allow integration with existing information environments, and by this enable these for publishing augmented reality. Bosch experts with their extensive industry knowledge provide consultancy, authoring training solution setup and support to help customers establishing a powerful augmented reality environment within their organization.



### Benefits

- + Augmented reality ROI aspects:
  - Efficiency increase for augmented reality users, especially in error
  - sensitive and complex cases
  - Reduction of failure rates
  - Increased training results with augmented reality
  - AR provides highest knowledge retention
  - AR enriches the sales process
- + SCAP ROI aspects:
  - common augmented reality platform enables augmented reality application at large scale
  - Augmented reality creation and publication by technical experts (non-IT)
  - Augmented reality across variants, throughout the entire product lifecycle
  - Integrates AR into service and business processes
- + The common augmented reality platform enables:
  - Augmented reality made by technical authors, not IT experts like technical documentation
  - across variants and product configurations
  - across devices (tablets, smartphone, augmented reality glasses) and platforms (iOS, Android, Windows)

**[bosch-automotive-aftermarket.com](https://www.bosch-automotive-aftermarket.com)**

Solution provided by: Bosch Automotive Aftermarket

# Mobile robotics – automotive meets Industry 4.0

As if steered by magic, the car drives itself from the end of the line to the collection area. Driverless parking is made possible with the aid of intelligent object recognition sensors combined with a vehicle coordination system. The installed sensors monitor the driving corridor and the area immediately around it and control the vehicle. The technology within the car reliably turns the commands from the infrastructure into driving maneuvers, and it stops the vehicle in time when required.

More efficient logistic processes and reduced costs due to networking and control of the various robotic applications (route planning, battery management and job management).

## Benefits

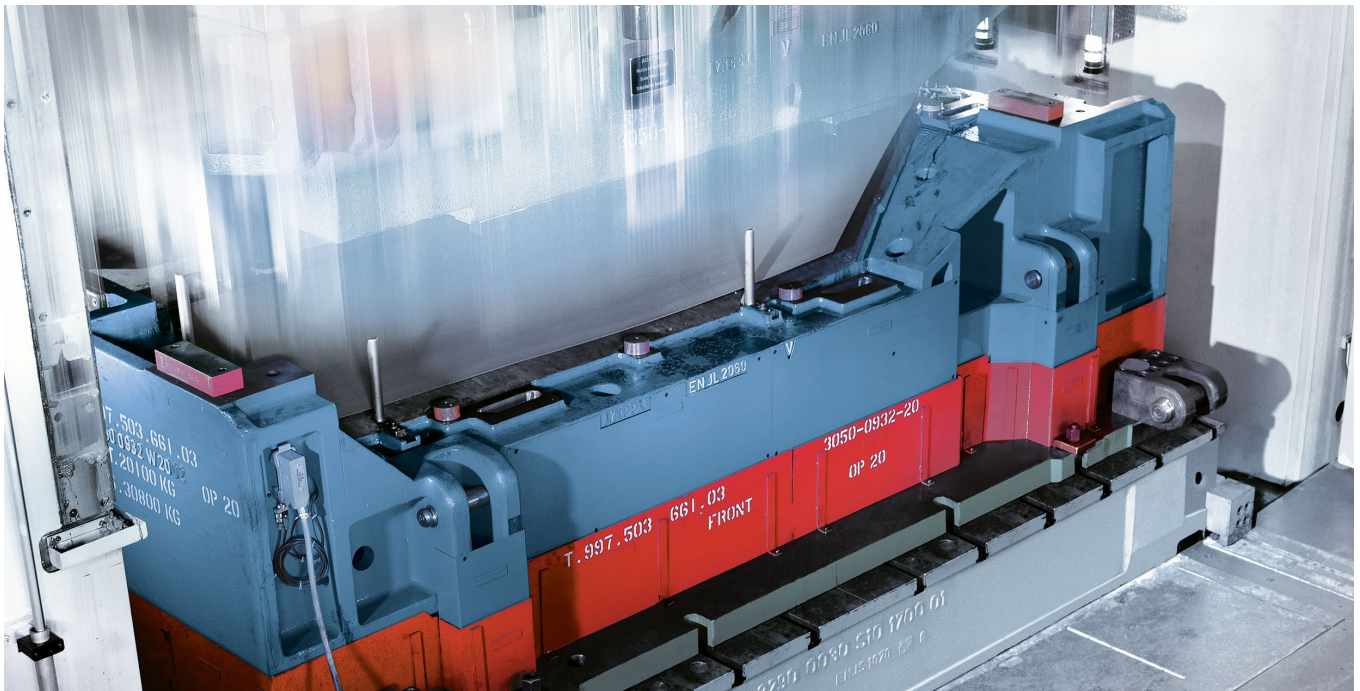
- + Safety is improved because human error is eliminated during parking, and accidents in the plant are reduced.





# Press shop

Precision and dynamics: Pressing requires high forces to be accurately and safely regulated. In addition, the demands placed on manufacturing complex geometries and ensuring a safe press transfer between the press steps are constantly rising. Batch sizes also continue to dwindle due to ever-shorter product lifecycles and faster model changes.



Bosch Rexroth facilitates pressing applications with a wide range of perfectly coordinated components and system solutions that allow you to leverage our drive and control technology to convert your machines quickly while ensuring identical repeat accuracy. The intuitive layout of the applications translates into minimal training. This, in turn, boosts productivity.

## Benefits

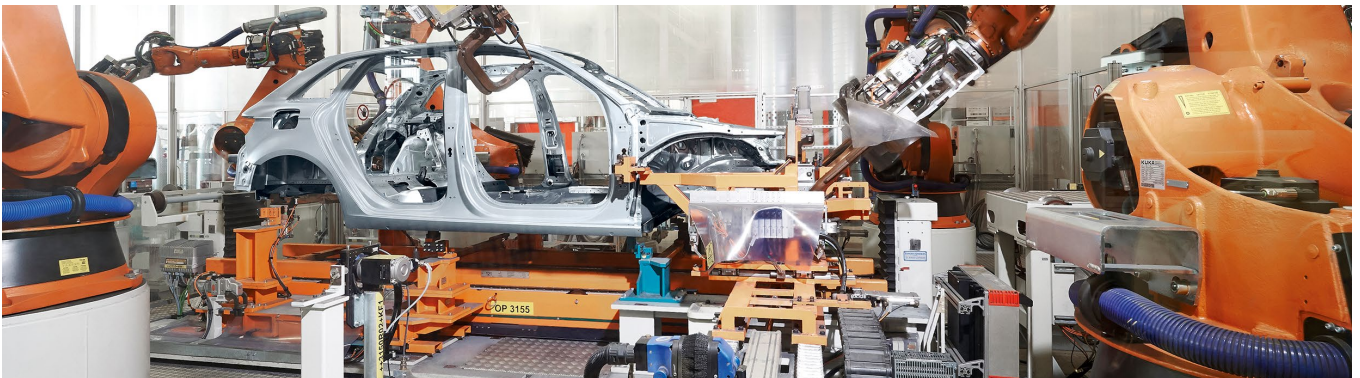
- + The Bosch drive and control technology allows quick retooling with consistent repeatability.
- + Bosch's intuitive products combine excellent user-friendliness and high quality standards to increase productivity
- + Bosch offers a broad range of perfectly compatible components and system solutions.

**boschrexroth.com**

Solution provided by: Bosch Rexroth

# Body shop

Quality and reliability: From floor, front section, and sidewall assembly to roof automation, door mounting, vehicle assembly, and final finishing: Body production places especially high demands on automation.



Automated welding equipment must be able to quickly and safely handle many different material combinations and weld them as perfectly as possible as tightening systems implement heightened safety requirements. The resistance welding systems specially designed by Bosch Rexroth for the automotive industry feature adaptive control to safeguard absolute process reliability and a high level of flexibility. The tightening systems are also refined and continually document safety-relevant connections to ensure the quality of the threaded connection.

## Benefits

- + Reliable and flexible resistance welding systems for correct welding of different material combinations
- + Bosch tightening systems document the safety-relevant connections and ensure the quality of the tightened connection
- + Scalable PLC and intelligent drive systems for flexible tasks





# Paint shop

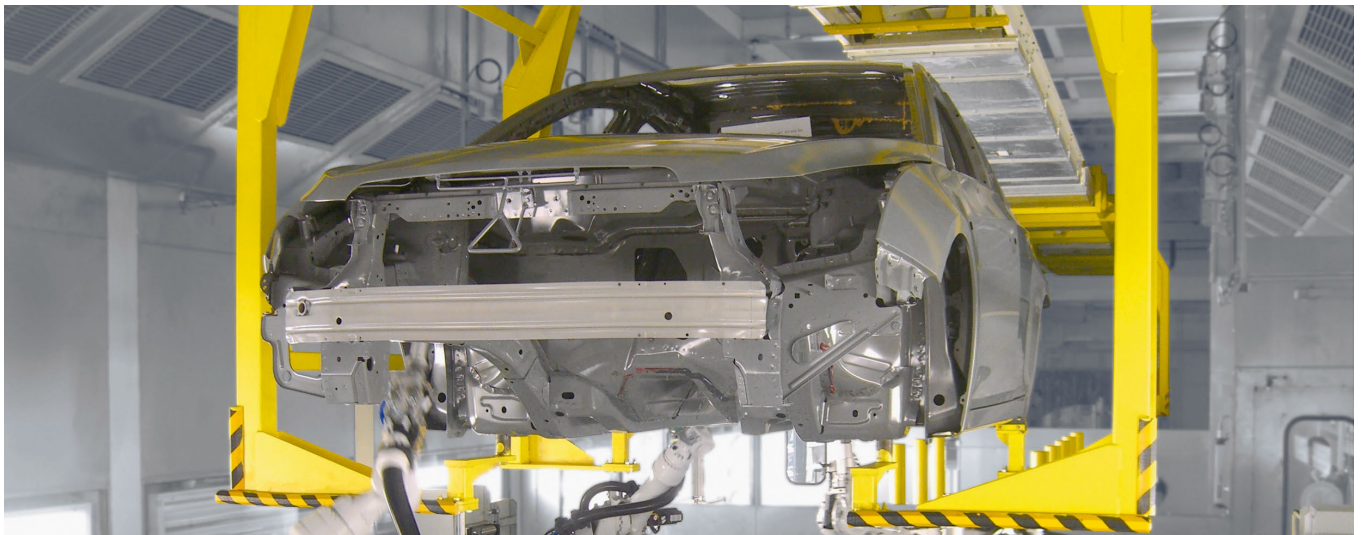
Precision and safety: A high-gloss finish applied easily and without waste. This is the challenge of the paint shop.

During the painting process, ultrahigh precision and exact metering of product are required when it comes to paint volume, the mixture ratio (air to paint), and motion (carefully executed motion sequences). Less waste as a result of reduced paint consumption facilitates quicker cleaning between work steps.

## Benefits

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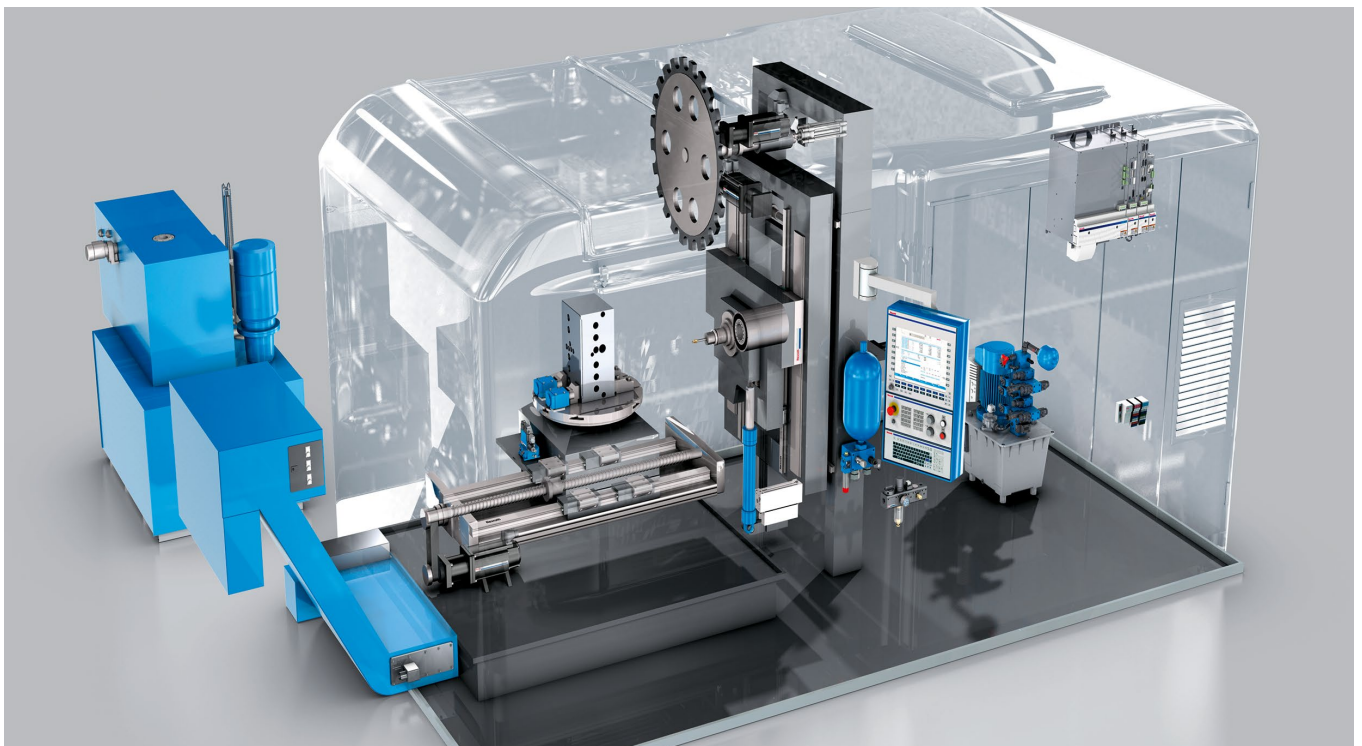
- + ATEX-certified assemblies and components for explosive environments
- + Safe environment for the employees working at the paint shop





# Powertrain machining

Ultrahigh productivity and user friendliness: Reliable components and system solutions that are perfectly coordinated to a production machining environment determine availability and thus productivity, in powertrain machining. Modern, flexible production concepts also require increasing levels of functional integration as well as easy operation and handling.



With our scalable standard components and open system solutions, you can improve flexibility during production planning and adapt output in line with current demand.

## Benefits

- + Maximum flexibility thanks to scalable standard components, and open-system solutions for optimum productivity
- + Systems with open-interfaced and consistent uniform look and feel for quick exchangeability

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Solution provided by: Bosch Rexroth

# Powertrain assembly

Complete, flexible solutions: When powertrain machining is finished, the assembly processes for powertrain must maintain a level of flexibility by realizing a highly productive environment for assembling a wide variety of variants. This requires customized assembly lines. Standardized systems and components can significantly reduce the inherent complexity, however, while noticeably increasing availability.



Bosch offers one-stop shopping for the full range of drive and control technologies. Our end-to-end drive and control concepts likewise help to handle complex tasks in a flexible manner. Maximum flexibility and carefully coordinated components boost your productivity.

## Benefits

- + Universal drive and control concepts for flexible realization of complex tasks
- + Reliable tightening technology with seamless documentation to ensure safety and functionality
- + All required drive and control technologies from one supplier

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Solution provided by: Bosch Rexroth

# Final assembly

Process reliability and flexibility: Welding, door assembly, cockpit integration and adjustment, and wiring: The number of tasks carried out in the final assembly area necessitates well-coordinated automation technologies. One of the main challenges in this context is to integrate man and machine as far as possible. Final assembly thus places particularly high requirements on the safety and flexibility of automated movements.



Bosch facilitates final assembly applications with its diverse range of components and system solutions for all drive and control technologies. Our tightening system ensures that threaded connections are reliable and secure. Our modular, integrated PLC solutions with open interfaces make it possible to easily convert to new processes and process flows. This, in turn, improves flexibility.

## Benefits

- + Easy conversion to new processes and procedures thanks to open-interfaced PLC solutions in modular design
- + Tightening technology with flexible connection to superior control systems is the perfect solution for applications that require high accuracy and reliability
- + Broad range of components and systems solutions for any drive and control technology

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# The Bosch Group

The Bosch Group is a leading global supplier of technology and services. 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 manufacturing. 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 deliver innovations 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 a huge number of associates in research and development.

The company was set up in Stuttgart in 1886 by Robert Bosch (1861-1942) as "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 is available online at  
[www.bosch.com](http://www.bosch.com)  
[www.bosch-press.com](http://www.bosch-press.com)

# Bosch divisions for selected verticals

	Airport facilities 	Automotive industry 	Commercial buildings 	Entertainment facilities 	Food and confectionery industry 	Hotel facilities 	Mining 	Pharmaceutical industry 	Railways and train station facilities 	Residential buildings 	Theaters 
<b>PROVIDER</b>											
<b>Building Technologies</b>	■	■	■	■	■	■	■	■	■		■
<b>Thermotechnology</b>	■	■	■	■	■	■	■	■	■	■	■
<b>Power Tools</b>	■	■	■	■	■	■	■	■	■	■	■
<b>Household Appliances</b>										■	
<b>Service Solutions</b>		■	■		■			■	■	■	
<b>Connected Mobility</b>	■	■	■	■		■			■	■	■
<b>Rexroth</b>		■	■	■	■		■	■	■		■
<b>Automotive Aftermarket</b>	■	■					■		■		
<b>Packaging Technology</b>					■			■			
<b>Smart Home</b>										■	
<b>Software Innovations</b>			■							■	
<b>Bosch Engineering</b>	■	■					■		■		
<b>Integrated Solutions</b>							■				





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