



Bosch solutions for urban mobility

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- ▶ Connected parking saves fuel and time – and reduces stress
- ▶ 48-volt drive systems make electric scooters an urban reality
- ▶ 300 projects for tomorrow's diesel engines

Coup: Bosch already offers mobility services for large cities. The Coup e-scooter sharing service is one example. After debuting in Berlin, it has now been launched in Paris. Bosch has put 1,600 e-scooters on the road – and more are on the way. Anyone 21 years of age or older with an international or EU category B driver's license can use this service. The Coup app enables users to find, reserve, and pay for the nearest e-scooter and then simply ride away on it – all without a key. A helmet and two charged batteries are stored under the seat. Coup makes sure the batteries are always charged so that customers do not have to worry about anything. Powered by electricity from renewable sources, the e-scooters can travel as fast as 45 kph. Users can park them in specially designated zones within Coup's area of operations.

Multimodal: In July 2017, Bosch launched the test phase for a mobility assistant that analyzes real-time data to find the quickest route through a city. This app guides commuters to their destinations efficiently, allows cities to regulate traffic volumes, and enables mobility providers to enhance utilization of their various means of transport.

Connected parking: Step by step, Bosch projects are helping take the stress out of the search for parking. At present, this search accounts for one-third of urban traffic. Whether community-based parking, active parking lot management, or automated valet parking – Bosch solutions for connected and automated parking save time and fuel, and spare people's nerves.

Finding a parking space: Bosch community-based parking simplifies the search for a suitable space. Using the ultrasonic sensors of their parking assist system, cars identify and measure the gaps between parked cars as they drive past them. The data gathered is transferred in real time to a digital parking-space map

that can help guide drivers to available spaces. Together with Mercedes-Benz and other manufacturers, Bosch is testing this service in cities across Germany and elsewhere in Europe. This system is to be expanded so that drivers can pay parking fees digitally.

Connected cars: By 2025, connectivity will have clearly changed driving for everybody. Connected functions will save almost 400,000 metric tons of CO₂ – as much as one major German national park can capture and store in three years. Strategies such as community-based parking and active parking-space management can reduce the number of kilometers driven in search of parking spaces by 480 million, while highly automated driving can also save fuel.

RDE: This year will see the first-time certification of diesel models that comply with the Euro 6 standards for real driving emissions, or RDE. Bosch is currently pursuing some 300 RDE projects with its customers. The company wants to support automakers in their efforts to make nitrogen-oxide driving emissions from diesel vehicles even lower. In urban test drives, Bosch has already shown this is possible.

Particulate filters: In Europe, Bosch will no longer be carrying out engineering work for spark-ignition engines that are not fitted with a particulate filter. Such filters have helped significantly reduce the particulate emissions of diesel engines, and this is now a goal for gasoline engines as well.

48-volt drive system for light electric vehicles: Bosch has developed a finely tuned 48-volt drive system – comprising a motor, control unit, battery, charger, display, and app – that is ideal for urban mobility. This drive system makes for efficient urban mobility and, thanks to its rapid acceleration from a standstill, for greater driving enjoyment. Whether two, three, or four wheels, this system is available for all classes of light electric vehicles. As it is made up of off-the-shelf automotive components, manufacturers will have the benefit of production-tested parts and minimal development expense. This gives both established OEMs and new players in the market the opportunity to launch vehicles within 12 to 18 months.

Final mile: Bosch electromobility is already in evidence in German urban delivery traffic. Bosch supplies the powertrain system for the German Post Office's Streetscooters. This is Europe's largest electric-vehicle fleet.

Keeping Bosch associates mobile no matter what: All Bosch locations in the Stuttgart metropolitan area rely on public transportation on days when particulate-pollution warnings are issued. In such cases, Bosch associates who work in Stuttgart can use their company ID as a ticket for work-related trips by public transportation. This special arrangement between the transportation authorities in Stuttgart and Bosch is yet another mobility solution the supplier of technology and services offers its workforce. It also allows Bosch to support the city's efforts to combat particulate pollution.

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Mobility Solutions is the largest Bosch Group business sector. In 2016, its sales came to 43.9 billion euros, or 60 percent of total group sales. This makes the Bosch Group one of the leading automotive suppliers. The Mobility Solutions business sector combines the group's expertise in three mobility domains – automation, electrification, and connectivity – and offers its customers integrated mobility solutions. Its main areas of activity are injection technology and powertrain peripherals for internal-combustion engines, diverse solutions for powertrain electrification, vehicle safety systems, driver-assistance and automated functions, technology for user-friendly infotainment as well as vehicle-to-vehicle and vehicle-to-infrastructure communication, repair-shop concepts, and technology and services for the automotive aftermarket. Bosch is synonymous with important automotive innovations, such as electronic engine management, the ESP anti-skid system, and common-rail diesel technology.

The Bosch Group is a leading global supplier of technology and services. It employs roughly 390,000 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 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 some 59,000 associates in research and development.

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