Press information
Bosch compact

Emissions-free, safe, fascinating: Bosch future mobility
These are the solutions at the 46th Tokyo Motor Show

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- Electrification solutions for mobility that is as emissions-free as possible: The component EAC (Electric Air Compressor) of the fuel cell system, the 48 V system and so on, will be displayed in Japan for the first time.
- Automation solutions for a safer mobility: A concept two-wheeler model with the advanced rider assistance system will be displayed in Japan for the first time.
- Connected solutions for fascinating mobility: An interior monitoring system for improved safety will be displayed in Japan for the first time
- Bosch booth at the Tokyo Motor Show: South 3/4 hall, booth S3402

Tokyo: At the 46th Tokyo Motor Show, to be held at the Tokyo Big Sight from October 24 (Thursday) through November 4 (Monday), 2019, Bosch will be showcasing its cutting-edge solutions for automated, connected and electrified mobility of the future. You will find Bosch in South 3/4 hall, booth S3402.

【Electrification solutions for Emissions-free mobility】

First time in Japan: Fuel Cell System that contains EAC (Electric Air Compressor)

Bosch is preparing to manufacture a Bosch Stack to commercialize fuel-cell powertrains, by industrializing the stack licensed from Powercell, which already offers the highest power density in the market. Bosch is also developing the essential system components for fuel cell vehicles to enable itself to supply the entire fuel cell system. At the Tokyo Motor Show, fuel cell systems including an EAC (Electric Air Compressor) will be exhibited for the first time in Japan. The EAC is a component to send oxygen to the cathode side of the fuel cell stack, which makes the fuel cell system work as efficiently as possible. A required amount of air is drawn from the surrounding atmosphere and compressed to the pressure level necessary for power generation and is supplied to the stack.

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First time in Japan: The 48-volt Mild Hybrid System that realizes improvement of fuel and reduction of CO_2

In recent years, demand for 48-volt mild hybrid systems has increased especially in Europe and China. The Bosch 48-volt mild hybrid system is a highly efficient and economical powertrain electrification solution that realizes entry-level hybridization in all vehicle classes by a motor that supports the internal combustion engine. It also improves fuel efficiency by up to 15% as well as reduces CO_2 emissions, thereby contributing to compliance with future fuel regulations and CO_2 reduction. Bosch provides all major components of the system and has started a strategic cooperation with the Chinese Contemporary Amperex Technology Co. Limited (CATL) on battery cells for its 48-volt battery.

Electric Vehicle and high-voltage Hybrid Electrification System (400V)

Bosch offers solutions for all types of powertrains including high voltage hybrid systems combined with a combustion engine system, in addition to electric drive system. The core of this system is the new powertrain “eAxle” for EVs (Electric Vehicles) and PHVs (Plug-in Hybrid Vehicles) that integrates a motor, inverter, and transmission. The module, though compact, greatly optimizes efficiency and achieves the industry’s highest efficiency at 93%. Mass production of “eAxle” is to begin in 2019 and is expected to appear in the Chinese market in 2020.

First time in Japan: Web-based validation brings about efficient development

Bosch conducts validation of its connected solutions with the cooperation of automobile manufacturers. In the past, staff from Bosch and automobile manufacturers gathered at the same place to verify systems and test vehicles, but now, Bosch is pushing forward the development of web-based validation, which performs web-based operations from data sharing to software updates and vehicle applications. By sharing data acquired from test rides and verification experiments around the world, and updating the systems and software of connected cars through the cloud, the web-based validation allows a more convenient and efficient development to be carried out and realizes a shorter development time. At the Tokyo Motor Show, the web-based validation will be introduced through a video presentation.

Thermal management – setting the right temperature in electric cars and hybrids

Bosch uses intelligent thermal management to increase the range of electric and hybrid vehicles. Precise distribution of heat and cold improves the efficiency of the battery and ensures that all components are working within their optimum temperature range. Also cabin climate control is integrated in the thermal-management system which delivers a pleasant temperature inside the vehicle

【Automation solutions for a safer mobility】

First time in Japan: Concept model with advanced rider assistance system (Ducati)

Bosch's advanced rider assistance systems support motorcyclists by improving the safety of two-wheeled vehicles and rider comfort. It comprises "ACC" (Adaptive Cruise Control), which maintains a safe distance from the vehicle ahead, "Collision warning system", which warns the rider under conditions where there is a risk of collision with the vehicle ahead, and "Blind-spot detection", which supports the safe changing of lanes. Bosch started public road trial testing of an advanced rider assistance system in Japan in March 2019. This is the first police-notified public road testing of an advanced rider assistance system in Japan. Bosch plans to start series production from 2020. It has already been decided that the system will be mounted on Ducati and KTM models, and with the cooperation of Ducati, a concept model equipped with the advanced rider assistance system will appear at the Tokyo Motor Show, the first time such a system has been displayed in Japan.

Radar sensors – surround sensors for complex driving situations

The latest generation of Bosch radar sensors are even better at capturing the vehicle's surroundings. Their greater detection range, wide aperture, and high angular resolution mean that automatic emergency braking systems can react more reliably.

Front camera – image processing with algorithms and AI

Bosch's front camera detects objects by combining image-processing algorithms with AI methods. The new camera's great strength lies in its robust object recognition, enabled by Bosch's multi-path approach. In congested urban traffic, it can for example recognize and classify partially obscured or crossing vehicles, pedestrians, and cyclists quickly and reliably.

At the Tokyo Motor Show, Bosch will display its interactive station, which allows visitors to access the features and view of the cameras and radars, which are indispensable for detecting objects around the car. In addition to object detection technology, Bosch will introduce key technologies for automated driving, such as vehicle localization estimation technology, on-board computer for automated driving, redundant brake system and cybersecurity.

Electric power steering – Servolectric®

Bosch is one of the few suppliers in the world who can handle the steering system control unit. The steering system control unit is the hardware integrating ECU and the assist control software, which becomes the key to the steering

system. Bosch's fail-operational electric power steering system, Servolectric®, has a redundant design so that even in the unlikely event of a failure of the electrical system, the electrical assist can continue to operate without stopping suddenly, and supports SAE levels 2 through 4/5 (fully automated driving) for automated driving. In addition, Bosch has been developing the steering system, taking account of a steer-by-wire system that will use electric signals to control the steering actuator. Servoelectric® was developed using modular design principles, to ensure wide compatibility regardless of automation level, and to reduce the burdens involved in developing steering systems. A common controller is used so that various outputs can be supported by employing a motor according to the assist capability of the steering.

【Connected solutions for fascinating mobility】

First time in Japan: Interior monitoring system

Monitoring the driver inside the vehicle to identify situations where the driver micro-naps, take their eyes off the road, is distracted, and so on, will become increasingly important in the future. Bosch's in-vehicle monitoring system accurately detects the state of the driver and warns the driver when necessary. This system not only contributes to improved safety, but also plays an important role in improving comfort.

Next-generation integrated cockpit

One trend is the integration of a computer workstation that controls multiple devices and operating systems inside the cockpit. Through integrated and centralized management of the infotainment feature, instrument cluster, and so on, cooperative control of content is realized, expanding the possibilities for new expressions. Bosch has experience and know-how in relation to products and technology expertise that comprise the integrated cockpit, and can safely and comfortably provide a next-generation cockpit.

Connected parking and interactive station

Bosch is developing connected parking technology that significantly reduces the effort needed and time spent for parking, while also reducing dents and scratches while parking. In 2019, the automated valet parking system developed by Bosch and Daimler was the world's first driverless SAE Level 4 parking function to be officially approved, and even in Japan, Bosch is the first globally to work on initiatives such as proof-of-concept for applying the automated valet parking technology to low-speed, unmanned vehicles at logistics-related facilities. At the Tokyo Motor Show, three use cases of connected parking solutions will be introduced at an interactive station: "Community-based parking", which provides the driver with real time information on parking spaces, "Automated valet

parking", which enables automatic parking by simply operating a smartphone, without requiring a driver, and "infrastructure-coordinated new vehicle transport applying valet parking", which realizes unmanned automation of vehicle transport.

Prevent digital theft of vehicles with Perfectly Keyless

Bosch's Perfectly Keyless system communicates via Bluetooth between the driver's smartphone and their vehicle, and it enables drivers to lock and unlock their vehicle and start the engine without needing an actual key. And thanks to its decades of experience in semiconductors, Bosch is in a position to make this connection as secure as a fingerprint. Every smartphone contains tiny microchips to manage communication via Bluetooth, and these play a key role in the Bosch solution. Together with sensors installed in the vehicle and a special control unit, they form a system that opens the door only for the smartphone containing the virtual key that fits in the Perfectly Keyless system's digital lock. In addition, because the digital key can be managed via the cloud, the key can not only be delivered with ease, but it can also be managed securely, and it prevents unauthorized access. Bosch will demonstrate how Perfectly Keyless works at the Tokyo Motor Show.

Overview of press briefing by Bosch at the Tokyo Motor Show 2019

Date and time: Thursday, October 24, from 8:45 to 9:00 a.m.
Location: Bosch booth (South 3/4 hall, booth S3402)
Speakers: Board of management member of Robert Bosch GmbH
Chairman of the Mobility Solutions business sector
Dr. Stefan Hartung

Board of management member of Robert Bosch GmbH
Mobility Solutions business sector
Dr. Markus Heyn

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Mobility Solutions is the largest Bosch Group business sector. In 2018, its sales came to 47.6 billion euros, or 61 percent of total group sales. This makes the Bosch Group one of the leading automotive suppliers. The Mobility Solutions business sector pursues a vision of mobility that is accident-free, emissions-free, and fascinating, and combines the group's expertise in the domains of automation, electrification, and connectivity. For its customers, the outcome is integrated mobility solutions. The business sector's 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 410,000 associates worldwide (as of December 31, 2018). The company generated sales of 78.5 billion euros in 2018. 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 460 subsidiary and regional companies in over 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 nearly 130 locations across the globe, Bosch employs some 68,700 associates in research and development.

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