

A more efficient drive, a faster recharge

Bosch starts production of 800-volt technology for electric vehicles

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- ▶ Start of volume production of electric motors and inverters featuring 800-volt technology.
- ▶ Silicon carbide chips increase the efficiency of the power electronics to as much as 99 percent.
- ▶ New I-pin technology means up to 35 percent more power density for the electric motor.

Stuttgart, Germany – Two of the things most drivers of electric vehicles wish for are efficient driving and the shortest possible recharging time. Bosch is now starting the production of new powertrain solutions based on 800-volt technology. This will make recharging faster and provide a further boost for electromobility. “Bosch is upping the voltage in electromobility. Our 800-volt technology is the next step toward more powerful electrical powertrains and shorter recharging times,” says Ralf Schmid, the executive vice president responsible for electrification in Bosch’s Powertrain Solutions division. The 800-volt version of the inverter is based on silicon carbide semiconductors. These increase efficiency, and thus also range. In the 800-volt variant of the electric motor, Bosch has increased the power density. This reduces weight and allows for a more compact design. A premium German automaker is now using the active parts of this powertrain, i.e. the rotor and stator, for the first time.

50 percent less heat loss with SiC technology

In recent years, 400-volt solutions have become widely established as the industry standard. With the same current, but double the voltage, twice as much power can now be transmitted. This modification allows for thinner cables, which saves on space, weight, and copper. As a result, the inverter is more compact and powerful. With a 400-volt onboard network, the maximum charge power at charge spots that are powerful enough is 250 kilowatts. With 800 volts, twice this is possible in theory.

In addition, the inverters feature SiC chips, in which carbon atoms have been introduced into the crystalline structure of the ultrapure silicon. This improves the semiconductors' electrical conductivity. In power electronics, moreover, 50 percent less energy is lost in the form of heat. The SiC chips have even more energy-saving potential to offer: for example, they increase the inverters' efficiency to as much as 99 percent.

35 percent greater power density thanks to new winding technology

The standout features of the 800-volt variant of the Bosch electric motor now going into volume production are 830 Nm torque and 460 kilowatts output. Thanks to the use of I-pin bar winding, the motor's efficiency, compactness, and level of automation in production can be further improved. In terms of power-to-weight ratio, this delivers 35 percent more power density, at 60 kilowatts per liter. On top of this, it offers an excellent torque density of 105 Newton meters per liter. This means that the Bosch motor achieves a maximum efficiency of up to 98 percent. The next generation of the electric motor will feature oil cooling. This will allow the heat generated in the electric motor to be drawn away better, and ensure continuously powerful operation over long distances, as well as in commercial vehicles.

Extensive portfolio, from components to systems

Bosch offers an innovative and extensive product portfolio, ranging from semiconductors to its complete powertrain units known as e-axles. Along the entire value chain, customers get the products they need for hybrid and electric vehicles – from passenger cars to trucks – from a single source. Bosch has now manufactured more than 3.5 million electric motors, and the same number of inverters. With engineering and manufacturing locations in the major markets, Bosch operates close to its customers around the world.

Press photo(s): #4dbc82d4, #3c7fdf5f, #429a76fd

BOSCH PRESS CONFERENCE: Monday, September 4, 2023, from 11:20 to 11:40 local time: with [Dr. Stefan Hartung, chairman of the board of management of Robert Bosch GmbH](#), and [Dr. Markus Heyn, member of the Bosch board of management and chairman of Bosch Mobility](#), at the Bosch booth D10 in Hall B3 and via livestream on the Bosch Media Service.

Panels with Bosch experts at the IAA Conference:

- **Wednesday, September 6, 10:00 – 10:15 CEST on the Main Stage:**
Keynote: “Life in motion – Why sustainable mobility is about more than just technology” with Dr. Stefan Hartung, chairman of the board of management of Robert Bosch GmbH.
- **Thursday, September 7, 11:15 – 11:30 CEST on the Main Stage:**
Keynote: “Paving the way to centralized architectures & software-defined vehicles” with Dr. Mathias Pillin, responsible for technology on the Bosch Mobility sector board.
- **Thursday, September 7, 15:00 – 15:45 CEST on the Yellow Stage:**
Session on data & next-level user experience: “Software-defined mobility enabling a completely new vehicle motion experience” with Mariella Minutolo, Executive VP Sales and Member of the Board of Management, ETAS GmbH, and Stephan Stass, Executive Vice President Engineering and Brake Systems Business and Member of the Divisional Board of Management, Chassis Systems Control, Robert Bosch GmbH.

Bosch at the IAA Experience:

The IAA Experience at the IAA Open Space in downtown Munich will be open **from September 5 to 9, 2023, from 10:00 to 20:00 CEST**. On **Sunday, September 10, 2023**, the IAA Experience is open **until 17:00 CEST**.

- During the IAA, the new Performance Line SX and other products from Bosch eBike Systems can be taken for a test ride on the cycling test track in Munich’s Englischer Garten park. In addition, Bosch eBike product experts will be on hand to answer questions in the Open Space at Odeonsplatz. moveID, a project led by Bosch within the “Gaia-X 4 Future Mobility” project family, will be holding a live demo with two electric vehicles. moveID will give its first insight into the MOBIX app, which allows users to park and charge anonymously at any location in compliance with the general data protection regulation. It will also showcase novel mobility services and business opportunities created by the use of decentralized technologies.

FOLLOW the Bosch IAA 2023 highlights at www.bosch-iaa.com and on Twitter: @BoschPress, #BoschIAA

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Mobility is the largest Bosch Group business sector. It generated sales of 52.6 billion euros in 2022, and thus contributed almost 60 percent of total sales. This makes the Bosch Group one of the leading automotive suppliers. The Mobility business sector pursues a vision of mobility that is safe, sustainable, and exciting. 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 421,000 associates worldwide (as of December 31, 2022). The company generated sales of 88.2 billion euros in 2022. Its operations are divided into four business sectors: Mobility, Industrial Technology, Consumer Goods, and Energy and Building Technology. As a leading IoT provider, Bosch offers innovative solutions for smart homes, Industry 4.0, and connected mobility. Bosch is pursuing a vision of mobility that is sustainable, safe, and exciting. 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 facilitate connected living with products and solutions that either contain artificial intelligence (AI) or have been developed or manufactured with its help. 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 470 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. With its more than 400 locations worldwide, the Bosch Group has been carbon neutral since the first quarter of 2020. The basis for the company's future growth is its innovative strength. At 136 locations across the globe, Bosch employs some 85,500 associates in research and development, of which nearly 44,000 are software engineers.

Additional information is available online at www.bosch.com, www.iot.bosch.com, www.bosch-press.com, www.twitter.com/BoschPress