

AGRITECHNICA 2025: Bosch Engineering presents powerful, compact, and efficient 800-volt electrification for agricultural machinery

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- ▶ Compact dimensions with a continuous high output of 188 kilowatts facilitate integration into existing device platforms
- ▶ Flexible concept for purely battery-electric drives of small to medium agricultural machinery or hybridization of large machines
- ▶ High robustness, reliability, and durability thanks to transfer of technology from automotive volume production
- ▶ High flexibility thanks to combination with tailored transmission solutions from Bosch Rexroth

Abstatt - High efficiency, minimal maintenance, and correspondingly low operating costs – powertrain electrification offers significant benefits, particularly for agricultural machinery in farmyard applications. This is all the more true if affordable electricity can be generated on-site using biogas, combined heat and power plants, or photovoltaic systems. At AGRITECHNICA, Bosch Engineering is presenting a high-performance electric drive for battery voltages of up to 800 volts, tailored to the specific requirements of the agricultural sector. The compact dimensions enable straightforward integration into tight installation spaces, meaning that existing device platforms can also be equipped with eco-friendly electric drives. "Our powerful new electrification solution combines high power density, compact dimensions, and optimum efficiency. Its impressive flexibility makes it the perfect choice for the electrification of all types of agricultural machinery," explains Philip Kurek, who is responsible for off-highway and maritime solutions at Bosch Engineering. Depending on the application, the system can be used as a purely battery-electric drive in small to medium agricultural machinery or combined with a diesel engine as a hybridization solution for large machines. The improved overall efficiency results in a reduced total cost of ownership (TCO) of the machine across its service life. Depending on the application profile, electrification thus also provides potential financial benefits over diesel-hydraulic powertrains.

The 800-volt drive system consists of the Bosch electric motor SMG230 and a highly efficient inverter equipped with silicon carbide power modules. The motor is designed for system voltages of 400 to 850 volts. In an ideal voltage and temperature range, it offers a continuous power output of up to 188 kilowatts and around 250 newton meters of torque. Up to 550 newton meters of peak torque can be delivered on a short-term basis. Thanks to the 800-volt technology, the power density has also been increased significantly. The new motor delivers up to 80 kilowatts more power than a comparable 400-volt machine with identical weight or, with the same level of performance, boasts more compact dimensions and a much lower weight. Engineered to meet the specific requirements of the 800-volt system, the silicon carbide semiconductors in the power modules enable faster switching operations and steeper switching slopes, meaning that significantly less energy is lost in the form of heat. The inverters of the drive system with silicon carbide semiconductors thus offer impressive efficiency of more than 99 percent. The safety and diagnostic concept is based on established standards from the automotive domain and has been adapted to the specific requirements of mobile machinery. Bosch Engineering supports its customers in integrating the drive system into their agricultural machinery as well as with the actual application of the system.

In addition, the electrification solution from Bosch Engineering offers great flexibility in combination with tailored transmission solutions from Bosch Rexroth, such as the new eGFV9120 coaxial gearbox. In collaboration with Bosch Rexroth and on the basis of the open BODAS ecosystem, Bosch Engineering supports its customers in fully integrating the drive into their agricultural machinery, including the necessary application development.

The SMG230 equipped with Rexroth's eGFV9120 coaxial gearbox will be presented for the first time as an agricultural solution at **AGRITECHNICA in hall 16, booth A05**.

Press photos and infocharts are available on the Bosch Media Service at www.bosch-press.com.

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About Bosch Engineering GmbH

Bosch Engineering GmbH is a wholly owned subsidiary of Robert Bosch GmbH and is head-quartered in Abstatt, Germany. As a systems development partner to the automotive industry since 1999, the company offers development services for powertrains, safety and convenience systems, and electrical and electronic systems – from the original concept to series production. Specialized in electronics and software, it draws on Bosch's proven large-scale series production technology to develop tailored solutions for a wide variety of applications in passenger cars, commercial vehicles, off-highway and recreational vehicles, and in rail applications, ships, and industry. Bosch Engineering GmbH also coordinates all the Bosch Group's motorsports activities. Additional information can be accessed at www.bosch-engineering.com.

Mobility is the largest Bosch Group business sector. It generated sales of 55.8 billion euros in 2024, and thus contributed around 62 percent of total sales. This makes the Bosch Group one of the leading mobility suppliers. Bosch Mobility 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 electrification, software and services, semiconductors and sensors, vehicle computers, advanced driver assistance systems, systems for vehicle dynamics control, repair-shop concepts, as well as technology and services for the automotive aftermarket and fleets. 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 418,000 associates worldwide (as of December 31, 2024). The company generated sales of 90.3 billion euros in 2024. Its operations are divided into four business sectors: Mobility, Industrial Technology, Consumer Goods, and Energy and Building Technology. With its business activities, the company aims to use technology to help shape universal trends such as automation, electrification, digitalization, connectivity, and an orientation to sustainability. In this context, Bosch's broad diversification across regions and industries strengthens its innovativeness and robustness. Bosch uses its proven expertise in sensor technology, software, and services to offer customers cross-domain solutions from a single source. It also applies its expertise in connectivity and artificial intelligence in order to develop and manufacture user-friendly, sustainable products. With technology that is "Invented for life," Bosch wants to help improve quality of life and conserve natural resources. The Bosch Group comprises Robert Bosch GmbH and its roughly 490 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. Bosch's innovative strength is key to the company's further development. At 136 locations across the globe, Bosch employs some 87,000 associates in research and development.

Additional information is available online at www.bosch-press.com, www.bosch-mobility.com, www.bosch.com.