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Flexible basis for future construction machinery

Manuela Kessler | 24.10.2022 | Lohr am Main / Germany | PI 046/22

Bosch Rexroth presents its latest developments for future-proof off-highway machinery at bauma 2022

- Hardware and software modules for fast solution development
- Sector-specific solutions for electrification and electronification
- Automation: Advanced assistance functions and partial automation
- Safe, efficient telematics from connectivity to data management



The haptic collision warning system nominated for the bauma innovation award combines hardware and software modules from the BODAS ecosystem for safer, more economical construction machinery. (Image source: Bosch Rexroth AG)

Practical Bosch Rexroth solutions for electric drivetrains, electronically controllable working hydraulics, future-proof telematics and step-by-step automation are ideally tailored towards each other, can be used selectively and are easy to integrate. This allows manufacturers of different sizes and in different development stages to quickly find a suitable solution for quick and cost-efficient market success with groundbreaking drive and working functions as well as digital business models.

Under the name of eLION, the company presents its scalable portfolio of high-voltage components for the electrification of drive and working functions. The modular platform was developed especially for the off-highway sector and comprises electric motors, inverters, gearboxes, software, accessories and coordinated hydraulics. Other key components such as DC/DC converters and onboard chargers complement the eLION portfolio and will, in the future, enable integrated solutions from a single source as part of a cooperation with BRUSA HyPower AG. The nominal power range extends from 20 to 230 kW (peak power over 500 kW) and covers the complete spectrum from compact to heavy-duty working machines with different sizes. The fully integrated functional safety according to ISO 13849 in all inverters saves time in engineering.

The electronically controllable hydraulic architecture eOC (electronic Open Circuit) enables machine manufacturers to dynamically control implement functions and travel drives in an open circuit to exploit the full potential of the mobile machine. By transferring control functions to the

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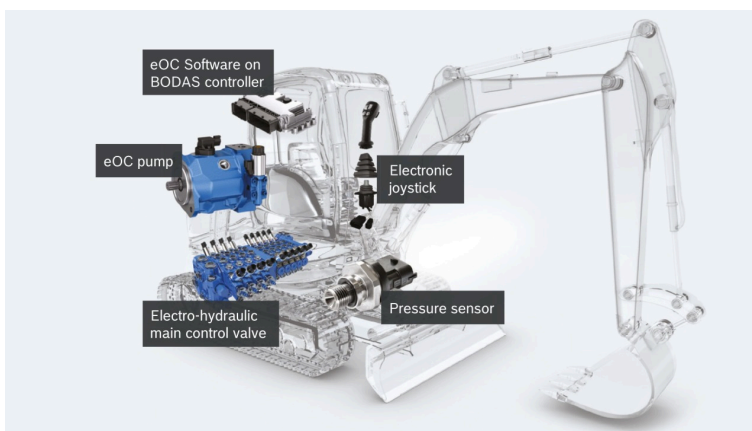
software, the working machines become even more versatile and flexible to use and even more productive with reduced energy consumption.

In the area of automation, Bosch Rexroth presents an expanded portfolio of advanced assistance functions and announces an open and high-performance, ROS2-compatible robotic control unit as part of its further road map as a future-proof standard platform. The automation portfolio presented at bauma is based on the extended BODAS modular system for hardware, software and telematics. The BODAS AS software modules, which are easy to integrate, serve as a starting point – first and foremost the ready-to-use ASRun modules for Rexroth control units (RC). These can be customized through parameterization and commissioned over the air (OTA).

The HMI concept also presented for intuitive use of assistance functions and partially automated processes includes ergonomic Sense+ joysticks with optical and haptic feedback as well as high-resolution, high-contrast and glove-operated BODAS displays with easy-to-record visualizations. One application example is the haptic collision protection system nominated for the bauma innovation award.

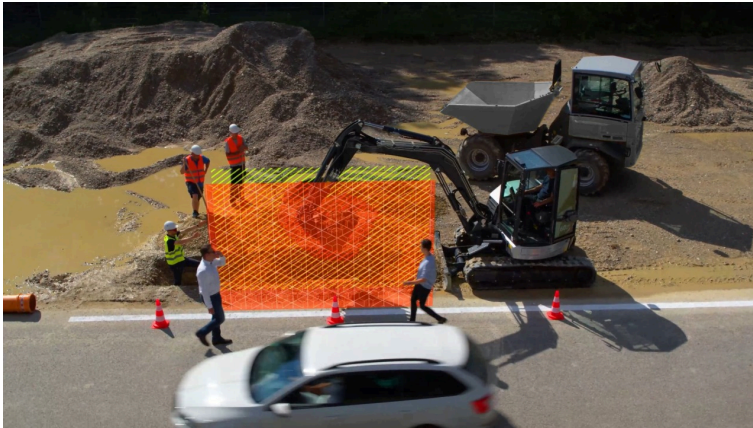
Within the BODAS Connect Ecosystem for telematics applications, Bosch Rexroth is introducing a range of over-the-air (OTA) services. For seamless machine availability, Rexroth control units and, in the future, also controllers from third-party manufacturers can be remotely updated on a mass scale. Bosch Rexroth is thus making a significant contribution to time and cost savings in the development of increasingly software-based vehicles with partially automated and autonomous functions. The Rexroth Connectivity Unit RCU acts as a secure link between the cloud and the vehicle. The processor-based telematics unit also forms the connectivity basis for a large-scale production-proven device management module and the end-to-end solution BODAS Connect All-in-One Connectivity including data management.

Last but not least, Bosch Rexroth is presenting a disruptive innovation in the field of software at bauma. Manufacturers of off-highway vehicles now have free access to the complete standard portfolio of BODAS software for controlling mobile working machinery. Via the digital myBODAS platform, OEMs can download validated software packages for a wide range of applications free of charge in order to test them and adapt them to their own needs. Proven building blocks minimize time, investment risks and costs. Only when the software is used in series production is billing based on a payment model with credits. This makes processing simple, flexible and transparent.

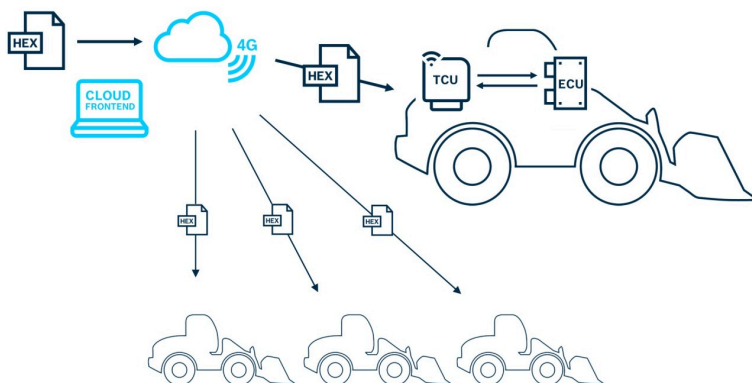


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Higher efficiency, better dynamics, individual behavior: With eOC (electronic Open Circuit), machine control, operating feel and dynamics can be set together with other parameters and changed depending on the situation. (Image source: Bosch Rexroth AG)



Automation now and in the future: Bosch Rexroth enables manufacturers of off-highway vehicles to gradually expand assistance functions all the way to autonomy. (Image source: Bosch Rexroth AG)



Advancing off-highway automation calls for mass-market remote updates: The new campaign management of BODAS Connect implements this immediately. (Image source: Bosch Rexroth AG)

Basic Information Bosch Rexroth

As one of the world's leading suppliers of drive and control technologies, Bosch Rexroth ensures efficient, powerful and safe movement in machines and systems of any size. The company bundles global application experience in the market segments of Mobile Applications, Machinery Applications and Engineering, and Factory Automation. With its intelligent components, customized system solutions and services, Bosch Rexroth is creating the necessary environment for fully connected applications. Bosch Rexroth offers its customers hydraulics, electric drive and control technology, gear technology and linear motion and assembly technology, including software and interfaces to the Internet of Things. With locations in over 80 countries, more than 31,000 associates generated sales revenue of around 6.2 billion euros in 2021.

Basic Information Bosch

The Bosch Group is a leading global supplier of technology and services. It employs roughly 400,000 associates worldwide (as of December 31, 2019). The company generated sales of 77.7 billion euros in 2019. Its operations are divided into four business sectors: Mobility Solutions, 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

PRESS INFORMATION

mobility. Bosch 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 440 subsidiary and regional companies in some 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. Bosch employs some 72,600 associates in research and development at 126 locations across the globe, as well as roughly 30,000 software engineers.

Press Contact

Please get in touch with our Press Contact



Manuela Kessler

Spokesperson
technology topics
+49 9352 184145

Manuela.Kessler@boschrexroth.de