PRESS INFORMATION

More openness, connectivity and sustainability across the value chain

Manuela Kessler | 17.04.2023 | Lohr am Main / Germany | PI 014/23

At HANNOVER MESSE, Bosch Rexroth will present numerous new products for connected hydraulics, industrial automation, and the electrification of mobile machines

Bosch Rexroth will present numerous open, easy-to-integrate automation solutions at HANNOVER MESSE 2023 and is continuing to drive forward the digital transformation in mechanical engineering. In hydraulics, the company is increasingly shifting functions to the software. The solutions use open standards throughout and thus increase the freedoms available to machine manufacturers and end users. At the same time, they reduce the consumption of energy and resources during use. With the recycling of used automation components and an innovative process solution for recycling batteries, Bosch Rexroth will also be presenting solutions for sustainable circular economy.

Automation: More openness and reduced consumption of energy and resources

Up until now, automation manufacturers closely linked software functions to their control hardware and thus tied customers to their product world. Although it was previously used exclusively on the ctrlX CORE control system, Bosch Rexroth is now making its real-time-capable, Linux-based ctrlX OS operating system available as a separate solution for industrial environments. ctrlX OS seamlessly connects even more automation components with the entire ctrlX AUTOMATION portfolio, including the partner solutions from the ctrlX World, in real time and independently of hardware. Machine manufacturers and system integrators can thus develop, install, update and operate software-based functions on any control systems even more easily and flexibly across all levels of the automation topology. As the first system and technology partner, WAGO offers the ctrlX OS operating system on its own devices and is working with Bosch Rexroth to develop new sector-specific solutions.

The ctrlX AUTOMATION toolkit also supports sustainability in industrial automation. More and more energy saving functions can be used – for example the Smart Energy Mode in servo drives. It ensures that energy is kept in the system intelligently and that peak loads are avoided as far as possible. Another trend is the reuse of automation components as part of the Remanufactured Products Program. Through professional reconditioning and the replacement of wear parts, a used servo motor for example can be restored to the quality standard of a new product, including a warranty. Around 75 percent of the components are reused, thus conserving resources.

Linear motion technology: The quicker way to tailored solutions

In the field of linear motion technology, Bosch Rexroth is speeding up the engineering processes for individual components and smart mechatronic subsystems with coordinated e-tools. During commissioning of the subsystems, the pre-installed operating software with a virtual assistant helps to save time. As Plug and Produce solutions, the Smart Function Kits for specific applications such as pressing and joining or handling and dispensing simplify and speed up

the entire engineering process. The pre-installed operating software with a virtual assistant ensures that the commissioning time of these subsystems is reduced by up to 80 percent. Visual sequence programming using Drag and Drop function blocks saves even more time. The Smart Flex Effector opens up entirely new freedoms in automation. The sensor-based compensation module with independent kinematics in six degrees of freedom gives robots the sensitivity of a human hand. The Smart Flex Effector has been nominated for the Hermes Award 2023.

Thanks to longer lubrication intervals and optimum use of lubricants, the linear motion technology solutions reduce operating costs as well as the use of resources over the entire life cycle.

Battery recycling: Deep discharging in just a few minutes

The increasing proportion of battery-electric cars worldwide is creating high demand for solutions for recycling batteries and the raw materials such as lithium, cobalt or nickel that they contain. At HANNOVER MESSE, Bosch Rexroth will present an innovative automation solution which reduces the time taken to discharge batteries from 24 hours to less than 15 minutes. The system solution is made up of standard components from the ctrlX AUTOMATION toolkit and the TS 5 transfer system as well as modular software tailored to the process. The patented deep discharging prepares the batteries for the subsequent recycling processes. The automation solution feeds the energy released into an intermediate circuit which supplies other actuators in the line or feeds the energy back into the electricity grid. The solution sets a new milestone for electrified mobility as part of the circular economy.

Asset administration shell: Flexible and graphical orchestration of manufacturing

Bosch Rexroth consistently relies on open, cross-manufacturer standards and interfaces in all automation technologies, such as the asset administration shell. It functions as a standardized digital twin for all automation components and solutions – both from Bosch Rexroth and from other manufacturers. Users orchestrate their brownfield and greenfield equipment graphically in ISO/IEC-standardized process models, independent of lot size, with the new individually adaptable software platform for flexible and changeable manufacturing, and without downtime. The standardized data and process transparency permanently increases the agility and reactivity of production.

H4U hydraulics platform: Greater productivity and sustainability

With the new H4U (Hydraulics for You) software platform, Bosch Rexroth is raising industrial hydraulics to a new level. It transfers hydraulic functions that were previously hardware-bound into hardware-independent software modules. However, the classic advantages of hydraulics remain. At the same time, H4U makes it easier to integrate hydraulics into existing automation environments. With the H4U.apps, end users can increase their productivity and energy efficiency while reducing their CO2 footprint. Customers can already use an app for pressure/volume flow control in their applications. At HANNOVER MESSE 2023, other H4U.apps, for example a

displacement/force control system for hydraulic axes, will be presented. As a result, the ctrlX AUTOMATION toolkit too has gained hydraulic functions.

eOC: Greater flexibility for mobile and stationary applications

On the basis of proven but mechatronically optimized hydraulic pumps for the open circuit, Bosch Rexroth presents the new eOC (electronic Open Circuit) hydraulic architecture. With these pumps for mobile and industrial applications, eOC technology allows operation with variable specifications for pressure, flow rate and power – in stationary applications and in highly dynamic transitions. eOC thus increases the stability of the function in the particular application. Efficiency advantages in components and the system network also increase efficiency. At the same time, energy recuperation solutions are made possible or can be simplified. The key to this is moving complex control processes from hardware controllers to the software level. This reduces the variance of pump adjustments and default settings. Less set-up work is needed too as the settings are configured only once per machine.

Hägglunds Quantum motor range: New peaks in performance and service life

Overcoming previously existing physical limits, the new Hägglunds Quantum hydraulic motor series offers a unique combination of torque and speed. With a top speed of more than 150 rpm, and at the same time being able to achieve maximum torque of more than 350 kNm they rewrite the rules of power density. By optimizing design and materials, Hägglunds has increased efficiency and tripled the average service life compared to previous series. The motors are suitable for crushers and internal mixers, for example, but also for mobile applications.

eLION platform: Bosch Rexroth continues to drive forward the electrification of mobile machines

The modular eLION platform was specially developed for global off-highway use and supports the full electrification of mobile machines. The motors' nominal power ranges from 20 to 200 kW with peak power levels of up to 400 kW. Fully integrated functional safety features in accordance with ISO 13849 help to save time during engineering. eLION includes motors and inverters as well as important system components such as DC/DC converters, onboard chargers and high-voltage cables. Bosch Rexroth also provides BODAS software modules and suitable gearboxes as well as hydraulic components such as axial piston pumps for the entire eLION platform. Numerous machines equipped with eLION are already in use as part of pilot projects.

Bosch Rexroth at HANNOVER MESSE 2023: Hall 6, Stand D26

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Bosch Rexroth regards openness, sustainability and resilience as the automation trends for 2023. (Image source: Bosch Rexroth AG)

Sensor-based compensation unit for articulated and linear robots: The Smart Flex Effector increases precision and productivity, avoids errors and allows greater automation. (Image source: Bosch Rexroth AG)

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At HANNOVER MESSE 2023, Bosch Rexroth will present the first industrial automation solution for the success-critical step of deep discharging high-performance battery cells. (Image source: Bosch)

The asset administration shell functions as a standardized digital twin for all automation components and solutions - both from Bosch Rexroth and from other manufacturers. Users orchestrate their brownfield and greenfield equipment graphically in ISO/IEC standardized process models, independent of l

With the new H4U platform, hydraulic functions can be flexibly designed and directly integrated into existing automation environments, for example ctrlX AUTOMATION. (Image source: Bosch Rexroth AG)

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With a maximum speed of more than 150 rpm and a maximum torque of more than 350 kNm, the new Hägglunds Quantum range of hydraulic motors sets new standards when it comes to power density. (Image source: Bosch Rexroth AG)

The new eOC (electronic Open Circuit) hydraulic architecture is based on proven yet mechatronically optimized hydraulic pumps for the open circuit. With these pumps for mobile and industrial applications, eOC technology allows operation with variable specifications for pressure, flow rate and power

Bosch Rexroth allows full electrification of mobile machines: The portfolio of the modular and scalable eLION platform ranges from motors and inverters to gearboxes, software and accessories and even suitable hydraulic systems. (Image source: Bosch Rexroth AG)

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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 and Industrial Applications as well as Factory Automation. With its intelligent components, customized system solutions, engineering 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 32,000 associates generated sales revenue of around 7.0 billion euros in 2022.

Basic Information Bosch

The Bosch Group is a leading global supplier of technology and services. It employs roughly 420,000 associates worldwide (as of December 31, 2022). According to preliminary figures, the company generated sales of 88.4 billion euros in 2022. 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 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 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. 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 128 locations across the globe, Bosch employs some 85,000 associates in research and development, of which nearly 44,000 are software engineers.

Press Contact

Please get in touch with our Press Contact

Manuela Kessler
Spokesperson
technology topics
+49 9352 184145
Manuela.Kessler@boschrexroth.de