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Hydraulics meets automation: Bosch Rexroth with new apps for software-driven mechanical engineering

Manuela Kessler | 03/04/2023 | Lohr am Main / Germany | PI 012/23

- Hardware-independent software solutions for hydraulics and automation
- Design and use hydraulic functions the easy way with H4U
- ctrlX AUTOMATION gains hydraulic apps



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

Bosch Rexroth creates new freedom in hydraulics: With the H4U (Hydraulics for You) software platform and the ctrlX AUTOMATION toolkit. In the past, know-how relating to hydraulic control technology essentially focused on hardware. Now, it is available in apps. With H4U, you can use hydraulics functions the easy way – independently of the hardware. ctrlX AUTOMATION has thus gained hydraulics apps too. The effects of these functions include greater energy efficiency. At booth D26 in hall 6 at HANNOVER MESSE, Bosch Rexroth will demonstrate the benefits of these two solutions and their synergies.

Mechanical engineering of the future will be software-driven. Bosch Rexroth has therefore transferred the control functions of hydraulics, which are traditionally hardware-agnostic, into hardware-independent software modules. The company is thus using apps to make functions easily accessible and usable in this area too.

With H4U, hydraulic functions can be flexibly designed and directly integrated into existing automation environments – also ctrlX AUTOMATION. The H4U.apps run on the compact ctrlX CORE control system for example. Bosch Rexroth's automation toolkit has relied on the principle of app technology since 2019. As a consistently open automation platform, ctrlX AUTOMATION provides all hardware and software components for complete automation solutions and complements the ecosystem with the partner network ctrlX World, into which third-party providers can integrate their solutions.

Steffen Winkler, Vice President Sales Automation & Electrification Solutions Business Unit at Bosch Rexroth, explained: “With its rigorous hardware independence, H4U too is following the

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path Bosch Rexroth has taken towards openness. This is an important and logical step. After all, software and connectivity are the drivers for the smart factory.”

“Bosch Rexroth is raising industrial hydraulics to the next level and is turning hardware-agnostic hydraulics functions into hardware-independent software modules. These integrate seamlessly into new and existing automation architectures,” said Guido Hettwer, Senior Vice President Industrial Hydraulics Business Unit at Bosch Rexroth. He added: “Hydraulic components are already very efficient. However, the architecture and the control technology for the hydraulic system still offer potential for saving energy, reducing CO2 emissions and increasing productivity. This is where our apps come in.”

Increasing productivity and sustainability in hydraulics

H4U raises the success factors usability, sustainability and performance to a new level for machine and system manufacturers as well as end users. The solution includes functions which help to save energy. One example is the hydraulic control of the pressure and volume flow (p/Q). An energy saving of 30 percent was achieved in a press application with a multi-axis system. The degree of savings depends on the load cycle and application conditions. Hydraulic systems can be tuned in advance for energy efficiency.

H4U also allows greater flexibility, e.g. when adapting production systems to meet changing customer requirements. It is no longer necessary to adapt the hardware in the automation environment.

Implementing the apps on existing control hardware saves time and money as end users no longer need to provide additional training. In addition, the software modules can be used to simulate entire machines, systems and production processes and, for example, to calculate the energy savings in advance. This saves time during engineering and commissioning.

At HANNOVER MESSE 2023, Bosch Rexroth will be presenting various H4U.apps such as the xF position/ force control for hydraulic axes at booth D26 in hall 6. The apps can be experienced live on ctrlX CORE. Anyone who is interested can also discover the benefits of ctrlX AUTOMATION and apps from all areas of automation.

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.

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Basic Information Bosch

The Bosch Group is a leading global supplier of technology and services. It employs roughly 402,600 associates worldwide (as of December 31, 2021). The company generated sales of 78.7 billion euros in 2021. 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 76,100 associates in research and development, of which more than 38,000 are software engineers.

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