

PRESS INFORMATION

Self-contained actuators: Intelligent and sustainable

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CytroForce-M, a hybrid plug & produce linear axis from Bosch Rexroth, speeds up digital engineering and reduces energy consumption



The CytroForce-M self-contained actuator from Bosch Rexroth combines straightforward engineering with the full power density of hydraulics. (Image source: Bosch Rexroth AG)

With hybrid drives such as the CytroForce-M, Bosch Rexroth makes it easier to construct and commission plastics processing machines. The ready-to-install self-contained actuators with a decentralized fluid circuit require no hydraulic power unit yet offer the full power density and robustness of fluid technology with their hydraulic gears. No knowledge of hydraulics is needed for construction and commissioning. The out-of-the-box CytroForce-M solution is up to 80 percent more energy efficient than constantly driven hydraulic power units and requires less than 10 percent of the oil normally needed. The fully digitalized drive also allows multi-axis applications with maximum motion control quality.

Manufacturers of plastics processing machines are increasingly relying on hybrid axes in order to combine the power density and robustness of hydraulics with the energy efficiency and engineering convenience of electrical drives. Bosch Rexroth offers a wide range of self-contained actuators and preconfigured out-of-the-box solutions such as the CytroForce-M. They make it easier to integrate hybrid drive solutions into a range of plastics processing machines. All functions are available in digital form on the basis of standardized, fully integrated hardware. Engineers, operators and maintenance staff require no knowledge of hydraulics.

Once the fully integrated CytroForce-M has been installed, technicians connect it using the power cable and the Multi-Ethernet interface for communication. The self-contained actuator is ready for use in less than 20 minutes. It also supports virtual commissioning: Parameters optimized on the digital twin are simply copied to the actual CytroForce-M.

The modular CytroForce-M is based on Sytronix, our tried-and-tested variable-speed pump drive. The energy-on-demand unit comprises a servo drive and hydraulic fixed or variable displacement pump with a control block. It also includes differential or tandem cylinders and a decentralized fluid tank and forms a ready-to-install assembly in protection class IP65. It covers forces of up to 1,200 kN at speeds of up to 800 mm/s. The positioning accuracy is 10 µm and the repetition accuracy is 5 µm.

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In plastics processing machines, CytroForce-M with its integrated software package covers all movements usually performed by electric and hydraulic axes without wear. It also copes with demanding motion control tasks with real-time synchronization and is fully connective. The self-contained actuators from Bosch Rexroth have a low-maintenance design. The hydraulic gears are unaffected by vibrations and overloading, which ensures a long service life.

With the preinstalled CytroConnect IoT service, end users can monitor all relevant operating states. The intelligent software ensures higher availability and prevents unplanned downtimes. CytroConnect supports both cloud and edge-based concepts for condition monitoring and predictive analytics.

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 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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