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High Energy Efficiency due to Customized Modularity

Variable-speed pump drives by Rexroth cover a broad spectrum



Due to a continuously increasing number of variants, Rexroth increases the degree of freedom for the economic use of variable-speed pump drives.

With optimized components, Rexroth increases the modularity of energy efficient variable-speed pump drives for customized variants. Thus, the BlueHydraulics technology covers an even larger area of application for the demand-controlled energy generation and control of hydraulic systems. The solutions that are ready to install and the performance and functionality of which can be finely adjusted reduce the primary energy consumption as well as the cooling power and thus the CO₂ emissions as compared to the present solutions by 30 to 70 percent.

Due to a continuously increasing number of variants, Rexroth increases the degree of freedom for the economic use of variable-speed pump drives. The drive and control manufacturer has, for example, now also optimized the axial piston units family A10 for the demand-controlled operation. The spectrum ranges from economic Frequency-controlled pump drives (FcP) for the efficient pressure and flow provision to Servo-variable pump drives (SvP) that can also perform axis control tasks and thus considerably simplify the hydraulic system.

Due to the optimization of the A10 axial piston units family for variable-speed pump drives, the modular system is extended by additional options. They work in one-, two- or four-quadrant operation in both, pump and motor operation. The four-quadrant operation opens up extensive electrical and electrohydraulic control possibilities for influencing the flow sensitively and according to the demand. This opens up additional potentials for the

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Press Release

optimization of the process dynamics and precision.

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Average noise emission reduced by up to 20 dB(A)

FcP controlled by means of asynchronous standard motors and frequency converters are suitable for applications in which the focus is on the demand-controlled oil supply in constant pressure systems, for example for machine tools. The internal and external gear pumps of the PGH, PGF and AZPF family, which are particularly optimized for the variable-speed operation cover a large speed range with high efficiency. The PGH-3x internal gear pump, e.g. reaches more than 3,000 rpm. In partial load operation, it reduces the speed to clearly below 200 rotations per minute, without limitations regarding the operating pressure. Consequently, the average noise emission of the hydraulic power units is reduced by up to 20 dB(A). Secondary noise protection measures that have been necessary until now can thus be omitted in most cases. FcP solutions also reduce the energy consumption with already existing hydraulic circuits.

Servo-variable pump drives simplify hydraulic circuit

Servo-variable pump drives (SvP) utilize the high dynamics of permanently excited synchronous motors and thus achieve considerable efficiency increases in plastics processing machines and presses, also with short cycle times. In serial die casting machines, manufacturers have realized energy savings of more than 80 percent. Depending on the load cycle, the additional costs for this solution may pay off within the first year of operation. Due to the control loop closed in a decentralized form, SvP moreover offer far-reaching possibilities for simplifying hydraulic circuits. The precise flow control allows for the direct control of the cylinder movements, without the valve technology that has been necessary until now.

For the control, servo-variable drives from Rexroth behave like all other electromechanical drives. In all variants, the software of the Rexroth pump drives moreover considers all hydraulic particularities ex works and simplifies the integration into machine concepts. Via field bus or Ethernet protocols, the pump drives with energy-saving BlueHydraulics technology smoothly fit in most diverse automation structures. With the drive-based IndraMotion MLD control, Rexroth is able to combine several servo-variable pump drives into one cascading system and generate very high performance according to the demand. The Ethernet-based real-time cross-communication of several controls when using SERCOS III allows users to synchronize an almost unlimited number of SvP according to the demand.

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Bosch Rexroth Canada is the Canadian subsidiary of Bosch Rexroth AG, one of the world's leading specialists in the field of drive and control technologies. Under the brand name of Rexroth the company supplies more than 500,000 customers with tailored solutions for driving, controlling and moving. Bosch Rexroth is a partner for industrial applications and factory automation, mobile applications and using renewable energies. As The Drive & Control Company, Bosch Rexroth develops, produces and sells components and systems in more than 80 countries. In 2009 Bosch Rexroth part of the Bosch Group, achieved sales of around 4.1 billion Euro with 34,200 employees.

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