Press Release

Intelligent self-sufficient systems for powerful drive tasks
Stand-alone self-contained electro-hydraulic servo axis (SHA) from the Rexroth portfolio are fully compatible with electromechanical variants

Stand-alone self-contained electro-hydraulic servo axis (SHA): Functionalities identical to that of electromechanical variants.

Stand-alone axes from Rexroth with identical servo-drives for actuators with mechanical or hydraulic force transmission offer new degrees of freedom for machine manufacturers in finding drive solutions that suit specific application requirements. The versions with hydraulic transmission are provided with their own, decentralized fluid circuit. The installation, commissioning and connection to controls and Industry 4.0 environments via a Multi-Ethernet interface or ProfiBus are identical on both variants.

Stand-alone self-contained electro-hydraulic servo axis from Rexroth largely consist of electrical and hydraulic series components. They pair all the functions known from servo-drives with the physical advantages of fluid power technology such as high power density and robustness. The standardized sub-assemblies, that is, hydraulic cylinder, control block and motor/pump group, form the basis for these linear axes of modular design. They are fitted with their own, closed fluid circuit and do without a central hydraulic power unit. The leak-free fluid circuit requires only a very small amount of hydraulic fluid. Rexroth delivers the axes completely pre-assembled, filled with hydraulic fluid and commissioned. The system is virtually maintenance-free and the fluid medium service life corresponds to that of the axis.
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Identical commissioning

In all of the stand-alone axes from Rexroth, servo-drives of the IndraDrive family within a power spectrum of up to 630 kW are used. Thanks to their decentralized intelligence and standardized software, the type of force transmission is irrelevant for the higher-level control. Also when it comes to commissioning, there is no difference. A power connection and a communication connection to the higher-level control are sufficient. For this, IndraDrive controllers with their Multi-Ethernet interface support all common Ethernet protocols like Sercos, Profinet, EtherNet/IP, EtherCAT, Powerlink or ProfiBus.

Intelligent, reliable and energy-efficient

The software of the IndraDrive servo-drives assumes the control of the linear unit. The SHA library contained in the software automatically takes account of all specialties of fluid power technology. This allows the user to easily parameterize even complex travel profiles, for example for forming and joining technology, injection molding machines and other applications that involve large forces. Apart from the standard function “Safe Torque Off”, IndraDrive drives offer further certified safety functions. With the help of “Safety on Board”, which is integrated in the drive, machine manufacturers can reach safety levels up to SIL 3 according to IEC 61508, which corresponds to PLe according to IEC 13849.

Stand-alone self-contained electro-hydraulic servo axis are characterized by their high energy efficiency. The servo-drive lowers the motor speed for the pump in line with the demand in partial-load operation or switches to stand-by mode, if temporarily no movement is required. Power branching in multi-axis operation is accomplished purely electrically. The controllers recover braking energy and can make it available to other consumers via an intermediate circuit. In addition, it is possible to store the recovered energy or feed it back to the mains.

Simulation for dimensioning in line with application requirements

For the rating of the SHA in line with application requirements, Rexroth developed a simulation program on the basis of experience in modelling of hydraulic systems gained over decades. This software tool shortens the time to market and offers machine manufacturers higher safety in the engineering phase.
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Thanks to the modular design of the SHA with standardized sub-assemblies, the machine manufacturer can easily adapt the axis exactly to his application. SHA from Rexroth cover the power range from 100 kN to 2,500 kN in pulling and pushing direction. The maximum stroke of the axes, which feature protection class IP 65, is 1,800 mm. With an integrated, magnetostrictive absolute encoder, the accuracy is 1 μm.

Economical, precise, safe, and energy efficient: drive and control technology from Bosch Rexroth moves machines and systems of any size. The company bundles global application experience in the market segments of Mobile Applications, Machinery Applications and Engineering, Factory Automation, and Renewable Energies to develop innovative components as well as tailored system solutions and services. Bosch Rexroth offers its customers hydraulics, electric drives and controls, gear technology, and linear motion and assembly technology all from one source. With locations in over 80 countries, the company generated sales of 5.6 billion euros in 2014, according to preliminary figures.

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