Powerful, precise, reliable: TOX®-ElectricDrive servo drives

Standardized, electromechanical servo drives in five versions for press forces from 2 and up to 1,000 kN

In production and assembly technology, the question often arises which drive type is required to generate press forces process-reliably and economically. In principle, a distinction is made between purely pneumatic or purely hydraulic as well as pneumohydraulic and electromechanical drive type. Pneumatic drives are initially characterized by speed and simple design, but have the disadvantage of high air consumption and can only generate comparatively low forces. In contrast, hydraulic drives generate strong forces with limited installation space, but are associated with disadvantages like sluggishness for large strokes, oil spills due to leaks, loud noises of the aggregate and finally high maintenance costs. Pneumohydraulic drives, which are fast and powerful, can be controlled easily and prevent leakages and thus oil spillages and contamination due to their internal hydraulics, are significantly more efficient and economical as well as lower in maintenance. However, the limited controllability is a disadvantage here.

Modern, electromechanical servo drives play in a different league altogether, as they produce high press forces as needed, can be precisely adjusted, are very easy to program, particularly automation-friendly as well as more energy efficient and altogether more economical. The only disadvantage is the initially higher investment, which is however more than offset in industrial applications through the optimum combination of ecology and economy. With the TOX®-ElectricDrive product range, TOX® PRESSOTECHNIK GmbH & Co. KG provides designers and users with complete and future-proof performance packages for the precise generation and positioning of press forces between 2 and 1,000 kN – including integrated sensors and process monitoring etc. for the demand- and product-driven optimization of work and joining processes.

A TOX®-ElectricDrive drive system consists of the electromechanical servo drive in compact design, the TOX®-Servo Controller and the TOX®softWare. Depending on the requirements and type, the servo drives have a ball screw (compact design, good energy efficiency, cost-effective). They are the preferred choice as drive for press systems or as single drives in work/process stations. For higher demands, the versions with planetary threaded spindle are available, which are characterized by a highly compact design, high power density, high rigidity and long service life. Typical applications here are punching tasks and above all press applications with high joining speeds or press applications in limited installation spaces. Following close consultation, the optimum servo drive is selected from the five versions, complemented by optional accessories like piezo sensors, fans, safety brake, automatic lubricating unit or motor options like motor holding brake and absolute encoder.

The servo controller runs as central intelligence behind the drive system, responsible for operation of the servo drive as well as parameterization and visualization. Amongst others, the TOX®-Servo Controller stands for fast commissioning (Plug & Work), free parameterization, comprehensive programming and diagnostic functions, programming/parameterization of the process parameters (online/offline) and integrated PLC functionality according to IEC 61131 for controlling additional movement from the controller. Furthermore, it enables the definition of process leaps, the setting of multiple conditions as well as the setting, definition and querying of variables. Additional features involve the possible switch to external force sensors, window and envelope monitoring and special applications tailored to customer requirements. The servo controller has the following standard interfaces: Data bus: Ethernet TCP/IP, fieldbus: PROFINET, optional Interbus, DeviceNet, Profibus, Ethernet/IP, EtherCAT, CC-Link, CANopen. The PROFIsafe safety version is also available. A PLe kit is available for the safe and type-tested integration of servo controller and brake of the EQ-K and EX-K drives.

The system component TOX®softWare consists of the operating level TOX®-HMI, the work level TOX®-Worx and connection of the PC to the servo controller. It includes all required programs for fast and simple configuration, parameterization, visualization and diagnosis for controlling the machine and drive system. Naturally, the servo controller and software are designed for network integration into the respective production systems, thus enabling the production monitoring and data storage via the master computer. The TOX®softWare can also be installed on an existing customer PC.

Image descriptions:

Image 1 shows the EQ-K type from the line-Q series. Cost-effective drives with press forces of 2, 5, 10, 30, 60 and 100 kN

Image 2 shows the EX-K type from the line-X series. Perfect for clinching, riveting, insertion of functional elements, punching and press applications with limited installation space. Press forces 10, 30, 60, 100, 200 kN. Customer-specific configurations are possible, e.g. speed, extension of force holding time, protection class IP65, stroke length ….

Image 3 shows the EX-F type from the line-X series for press applications with short clock times. Press forces 5, 10, 30, 60, 100 kN. Customer-specific configurations are possible, e.g. speed, extension of force holding time, protection class IP65, stroke length ….

Picture 4 shows the compact EPMR robot tong drive. Press forces 55, 80 and 100 kN

Image 5 shows the EPMK drive for press applications with high forces (300, 400, 500, 700, 1000 kN). Customer-specific configurations are possible, e.g. speed, extension of force holding time, protection class IP65, stroke length ….

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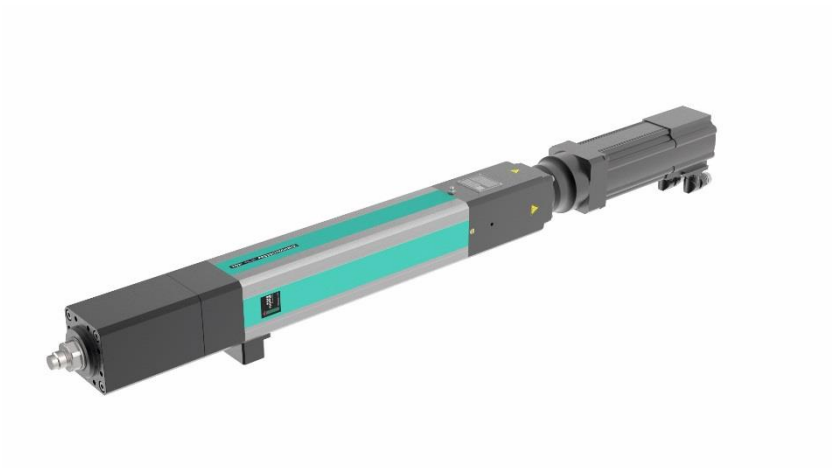

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