

TOX®-ElectricDrive

Precise force for accurate pressing in

REKO Rubbertech has developed a high-performance assembly system for the repeatable pressing in of steel parts into vibration dampers for the automotive industry. TOX® PRESSOTECHNIK supplied the drive technology including control and software, thus enabling short cycle times and process monitoring.

Innovative automated assembly and test systems are the business of the medium-sized REKO GmbH rubbertech in Östringen in the Karlsruhe district in Germany. The company, renowned in the automotive industry, solves tricky technical test-related as well as production- and assembly-related tasks with high competence and comprehensive process expertise. Proof of this is the development of a high-performance assembly system for vibration dampers in rubber-metal combination, which are used as mounts in vehicles. In order to be able to produce the required number of these components in the required quality, the REKO technicians developed a multi-station rotary transfer system with integrated force/displacement monitoring.

Whilst searching for a suitable drive, REKO got in touch with TOX® PRESSOTECHNIK. The special machine manufacturer had already gained very good experience with their pneumohydraulic and electromechanical drives. One of the challenges was to limit the unproductive idle times to a minimum when picking up, transferring and positioning the steel part to be pressed in onto the rubber body of the vibration damper. The cycle times should be kept as short as possible here, to be able to guarantee the expulsion rate.

Tool and gripper in one

This was made possible by a special detailed solution: The press-in head serves as a gripper for picking up and transferring, or for positioning the steel part, and as a press-in tool. The press-in station is mounted on a slide and travels from the removal position of the steel part to the press-in position via the rubber vibration damper, which is already in position by means of the round index table and workpiece mount. TOX® PRESSOTECHNIK recommended an electromechanical drive solution from the TOX®-ElectricDrive modular system as suitable force/displacement-monitored press system. The EQ-K type is characterized by a compact design which can be easily integrated into workstations or systems. The combination of E-motor and ball screw has a working piston speed of up to 150 mm per second, thus ensuring

highly dynamic motion sequences, which in turn ensures short positioning times. The maximum press force is 55 kilonewton and the total stroke is 150 millimetres at displacement repeat accuracies of ± 0.01 millimetres. The force sensor records the force highly accurately with an accuracy of less than ± 1.0 percent, based on the measuring range end value, thus ensuring an accurate and above all reproducible press-in operation. REKO achieves the required short cycle times with the stroke, which can be adjusted as required, in combination with the dynamic lifting/lowering movements and the integrated gripping/pressing functions in the press-in head. These short cycle times confirm also the capacity calculation and the expulsion rates of the assembly system.

Drive, control and software from the TOX® modular system

The scope of delivery also comprised the control of type STE as well as the intelligent servo controller for the electromechanical drive unit including the especially customized TOX®-SoftWare and cable set. While the single-axis servo controller with integrated logic controls the TOX®-ElectricDrive system and processes the process data instantly, the software simplifies its commissioning as well as process monitoring amongst others. It also enables the export of process data, thus ensuring the complete quality certification.

While TOX® PRESSOTECHNIK provided a completely pre-installed as well as mechanically and electrically ready to connect press-in solution which provides process monitoring and short cycle times REKO was able to fully focus on the realization of the assembly process.

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Meta title: TOX®-ElectricDrive optimizes vibration damper assembly

Meta description: TOX® PRESSOTECHNIK supports REKO rubbertech in the development of an assembly system for vibration dampers with drive technology including control and software.

Keywords: TOX® PRESSOTECHNIK; TOX®-ElectricDrive; EQ-K 055; control STE; press system; force/displacement monitoring; process monitoring

Captions:

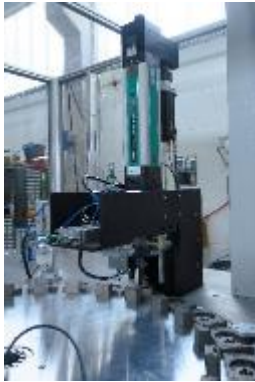


Image 1:

Assembly station with process monitoring for the pressing in of steel parts into rubber vibration dampers. TOX®-ElectricDrive provides the drive.



Image 2:

In addition to the electromechanical drive TOX®-ElectricDrive of type EQ-K 055, TOX® PRESSOTECHNIK also supplies the one-axis servo controller with integrated logic.



Image 3:

The combined gripping and press-in tool shortens unproductive idle times.



Image 4:

Mounting complete in perfect cycle times: the rubber vibration damper with steel part.

Images: TOX® PRESSOTECHNIK GmbH & Co. KG

About the company:

TOX® PRESSOTECHNIK is a supplier of presses, systems as well as components for sheet metal joining and assembly technology. Since its foundation in 1978, the family owned company has become a global player with more than 1400 employees worldwide, 550 of which at the headquarters in Weingarten, Germany. The success story started with one pneumohydraulic drive – the TOX®-Powerpackage. The “Components” division now includes pneumohydraulic and electromechanical drives as well as controls, sensors and software for process monitoring and quality assurance. In addition to a large range of presses, the system range comprises manual, machine and robot tongs. Another mainstay are modern sheet metal joining procedures, also incorporating the TOX®-Clinching Technology, which makes the company today’s market leader.

Drives, technologies, applications and systems from TOX® PRESSOTECHNIK can be found at automotive manufacturers and their suppliers as well as at industrial businesses for household appliances, electronic components, furniture and much more. Special versions of the TOX®-Drives are also approved for the food industry.

TOX® PRESSOTECHNIK is represented worldwide: 18 subsidiaries, amongst others in the USA and South America, Europe and South Africa, India, China and the entire Pacific Region. 20 representatives in many other markets support and advise local customers.

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