

Clinching tongs as equipment 4.0

With standardized tongs, standardized drives and standard controls that are usable drive-independently to automated, I 4.0-capable production solutions

The company TOX® PRESSOTECHNIK GmbH & Co. KG, D-88250 Weingarten, has already been focusing on machining solutions suitable for series production for the joining, punching and forming of sheet metal parts for the automotive industry, white good production, enclosure and apparatus construction as well as electrical engineering and electronics for many years. In many cases, machine or robot tongs are used for mechanical machining, particularly for joining. Here, TOX® PRESSOTECHNIK provides customers with the significant benefit of being able to supply everything from one responsible source. This includes the technologies/applications and the respective tools as well as the necessary production equipment, in this case machine and robot tongs.

Based on conventional tongs 1.0, which were and are generally equipped by TOX® PRESSOTECHNIK with very compact, easy to install and energy-efficient pneumohydraulic drive cylinders of the type TOX®-Powerpackage, the design and fittings of the tongs have considerably changed through the years. With the advent of the electromechanical drives TOX®-ElectricDrive, new fields of application could be opened up with clinching tongs 2.0, and the control of the electromechanical drives provided new possibilities of process monitoring and optimization. Thanks to the selection of drives (pneumohydraulic or electromechanical) as well as the expansion of the range of standard tongs and specific accessories, the modular design of the tong series 3.0 could be standardized further.

The logical further development is now manifested in the tong series 4.0, characterized by standardized tongs with optimized C-frame, standardized drives as well as standard controls that can be used drive-independently with standard software. The selection of different drive technologies is also justified, as depending on the task, the different joining technologies like the insertion of semi-hollow punch rivets (S HPR), solid punch rivets (SPR), ClinchRivet® and TOX®-Clinching require a pneumohydraulic or electromechanical drive. However, further to process suitability, clinching tongs 4.0 as heavy duty equipment must also meet additional requirements: Application flexibility, weight optimization for speed and dynamics, low and efficient use of energy, low maintenance, short-term delivery times, communication ability within the networked production, supply of replacement parts, simple handling and operation.

Optimization of the tongs resulted in the existence of only one C-frame width. Furthermore, there are standardized interfaces for the drives, tools and attachment parts, and the tool alignment is improved. What is also new is the control system architecture, the automatic configuration (the tongs automatically register at the control system, without renewed parameterization), and finally the HMI user interface. This enables intuitive

operation, and the visualization with icons means that less text is needed and less needs to be read.

Image descriptions:

The image shows a robot tongs with electromechanical drive TOX®-ElectricDrive

