

## **Setting five nuts and bolts in one stroke**

System solution competence for production facilities and rational processing of functional elements result in economical complete solutions in the manufacturing of automotive parts

Generally for the user, the difficulty ultimately remains the same: The potential supplier for a production solution either shows his strength in the technology to be applied and needs a special machine manufacturer for the implementation, or his strength is in special machine building, and the technology or process technology must be bought in addition. Both cases involve the interface issue and overall responsibility, which often complicates the project implementation. Almost all manufacturing industries and their suppliers today therefore prefer to rely on complete solutions from a single source, and this is particularly true in the demanding automotive sector. In order to be able to meet the increasingly complex tasks here, all disciplines for complete production and assembly solutions for sheet metal and more come together in the technology company TOX<sup>®</sup> PRESSOTECHNIK GmbH & Co. KG, Weingarten, Germany. Products starting with the TOX<sup>®</sup>-Round Joint, a sheet metal joining technology, procedures for setting rivets and inserting functional elements up to pneumohydraulic and electromechanical press drives and further complete press and production machines are available. Literally anything is offered, including control units, production monitoring technology and software, to be able to fully supply customers from one responsible source. This also convinced FFT Produktionssysteme GmbH & Co. KG in Fulda, Germany, with regard to a manufacturing requirement for an Asian automotive manufacturer. The tricky task at hand was to press in five nuts and bolts in one work step in the serial production of car cowls!

Optimum production solutions with compatible standard components

The engineers from TOX<sup>®</sup> PRESSOTECHNIK dug deep into their construction kit for presses, drive technology, control units and software for this purpose, and based on a standard press, provided a complete solution as stand-alone workplace. It consists of a TOX<sup>®</sup>-4-column press MAG 200 with guided 4-column ram plate, a pneumohydraulic drive TOX<sup>®</sup>-Powerpackage X-K 170 for press forces up to 1,627 kN (at 6 bar air pressure) and a TOX<sup>®</sup>-Universal Base Frame for mounting the press system and the supply/control units. Additionally, a 5-point press-in tool, a TOX<sup>®</sup>-Spray Equipment, a TOX<sup>®</sup>-Safety Control STE-328 and finally five TOX<sup>®</sup>-Pressing Monitors EPW 400. Between the columns, the press provides a tool mounting area of 1,500 mm (X-axis) or 650 mm (Y-axis) as well as a tool opening of 190 mm in case of a built-in tool. This ensures that the car cowls and the nuts and bolts to be set can be inserted into the respective upper and lower tool quickly and unhindered. The lower tool of the built-in 5-point tool is equipped with piecepart position adapters, piecepart holders and

piecepart query sensors as well as, amongst others, three die holders and dies for press-in bolts and two die holders plus dies for press-in nuts. The upper tool has two vacuum element holders for press-in nuts as well as three punch holders and punches for press-in bolts. For inserting the nuts and bolts into the car cowls with 0.8 mm thickness, the pneumohydraulic press force drive supplies a maximum of 1,627 kN, so that there is enough reserve for additional press-in or machining operations. The compact drive of type TOX®-Powerpackage X-K 170 additionally works with a fast approach force of 40 kN (total stroke 200 mm, of which 190 mm fast feed stroke and 10 mm power stroke) as well as a retracting force of 25 kN, whereby it is additionally supported by two pneumatic return stroke cylinders in the return stroke, to keep the unproductive idle times as short as possible.

High productivity paired with ease of use and safety standards

For a highest possible process reliability, the 5-point tool system is equipped with a spray equipment, and the five press-in stations have their own process monitoring sensors each. The TOX®-Pressing Monitor EPW 400 has 16 digital inputs and 8 digital outputs, so that the measuring data and information of the five decentralized measuring stations can be processed in one single system. The entire press system is enclosed on three sides and protected against access by third parties; the loading/discharge side is secured by protective covers and an accessible light shield. The TOX®-Safety Control STE-328 is responsible for the system control and monitoring, which can be operated individually via the two operating modes one-handed start and jog/setup mode. The entire press system was initially inspected and approved with original material at the factory in Weingarten. The delivery to the end customer was followed by commissioning and training on site. With the perfect interplay of all system components and the 5-point tool system, the employees now have a production system with which they can meet the requested output of assembled car cowls within the specified timeframe with no problem.

#### **Image descriptions:**

Image 1 shows the supplied TOX®-4-Column Press MAG 200 with pneumohydraulic drive TOX®-Powerpackage X-K 170

Image 2 shows a pneumohydraulic drive TOX®-Powerpackage of type X-K

Image 3 shows the tool mounting area with 5-point tool for setting five nuts and bolts in one stroke

TOX® PRESSOTECHNIK GmbH & Co. KG  
Riedstrasse 4  
D-88250 Weingarten  
Tel. 0751 / 5007-0  
E-Mail: [info@tox-de.com](mailto:info@tox-de.com)  
[www.tox-pressotechnik.com](http://www.tox-pressotechnik.com)

Image 1 shows the supplied TOX<sup>®</sup>-4-Column Press MAG 200 with pneumohydraulic drive TOX<sup>®</sup>-Powerpackage X-K 170



Image 2 shows a pneumohydraulic drive TOX<sup>®</sup>-Powerpackage of type X-K

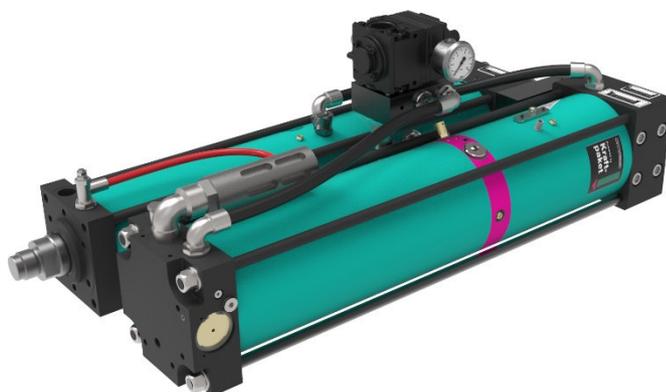


Image 3 shows the tool mounting area with 5-point tool for setting five nuts and bolts in one stroke

