

When it comes to cooking pots, Fissler is relying on a welding installation with servo drive from TOX PRESSOTECHNIK

Safe bonding of the base

The base of a cooking pot consists of many layers. To prevent the base, core and pot from moving during the production process, a welding installation from Walter Heller GmbH bonds the individual components together accurately. An electromechanical servo press from TOX PRESSOTECHNIK adapts the stroke to the size of the pot, thus accelerating the process.

Conducting, distributing, maintaining heat. A pot must meet these three tasks optimally in order to prove itself in the amateur as well as professional league. Fissler knows how a cookware manufacturer can achieve this. Established 175 years ago by tinsmith Carl Philipp Fissler in Idar-Oberstein, Germany, the now internationally active company Fissler GmbH represents cookware “Made in Germany”. The fact that the premium pots keep Fissler's promise is repeatedly confirmed by the German consumer organization Stiftung Warentest. The secret of a good pot lies in its design and the production process. If something goes askew here, the base is not level. And if it does not sit flat on the stovetop, the pot will not meet at least one of the three tasks assigned to it. Hollow spaces in the sandwich base are equally detrimental to optimum heat distribution. A perfect bonding of the aluminum core with the stainless steel base and pot is achieved with one hammer blow. It strikes the heated components – pot, base and aluminum core, at 2,000 tons. “If the individual parts were merely lying on top of each other, the base and pot could already move during heating. “As a result, this would later increase energy consumption and adversely affect the cooking experience”, says Gerd Maurer. He is Sales Manager at Walter Heller GmbH in Dierburg, whose special machine firmly and precisely secures the pot and base before heating. “This way, everything stays in place.”

Pot in the nest

Walter Heller is a “repeat operator”. Three years ago, the specialist for welding technology already designed a machine which bonds pot, base and core with a weld point. The order for a second machine was placed in 2019. Its most important components: a rotary table with four component holders – called nests –, a welding tong and its drive. For safety, Heller integrated a light curtain and constructed the rotary table closed. As soon as the operator has equipped two nests with the stainless steel base – this makes the pot suitable for induction hobs and protects

the aluminum against corrosion – as well as with the particularly thermally conductive aluminum blank and the deep-drawn pot, he releases the process. The table rotates, the welding tong lowers in direction of the pot base. For lowering, Walter Heller relies on an electro-mechanical servo drive of the TOX-ElectricDrive series from TOX PRESSOTECHNIK GmbH & Co. KG. “The advantage of the servo drive is its maximum stroke of 450 millimeters as well as the option to actuate it continuously”, says Gerd Maurer. This way, the welding specialist can actuate different pot and pan sizes with heights between 80 and 320 millimeters. “If we were to use a pneumatic cylinder, the welding tongs would have to travel the complete path each time – however, a 170-millimeter stroke is sufficient for a pot with a height of 150 millimeters”, explains Mr. Maurer. “With almost 800,000 working cycles per year, this saves a significant amount of time and air altogether, and thus relativizes the higher purchase price of the servo drive.”

No deformation

But what does this have to do with a level base? “The Fissler project does not involve a conventional resistance spot welding installation”, says the Sales Manager. The cylinder and tongs are so heavy that they would simply bend the pot base, which is less than ten millimeters thick. A possible solution would be a fixed welding tong. “However, this was not possible, as the design of the rotary table is closed for safety reasons”, says Mr. Maurer. “We therefore rely on a floating C-welding tong.” As soon as the electric servo drive lowers the top electrode, a pneumatic cylinder activates. “This lifts the bottom electrode into the table each time, thus closing the electric circuit. This in turn relieves pressure on the base, and we do not risk deformation”, explains Mr. Maurer the clever mechanism. After welding, the tong drops down and releases the table again.

The ElectricDrive drive works with up to 220 millimeters per second. The welding installation is finished after approx. eight seconds, and the table rotates the next pot components below the tongs. The operator takes the completed pots from the two component holders in the front during the welding process, and loads them again.

“Thanks to the servo drive, Fissler efficiently produces different pot sizes on one system. It is a system that has proven itself consistently”, says Gerd Maurer full of praise. In addition to the continuously adjustable stroke, the decision for a drive cylinder from TOX PRESSOTECHNIK had another reason. Fissler uses several press drives from TOX PRESSOTECHNIK in its production. “The decision for a TOX-ElectricDrive drive supports Fissler in the scheduling of service assignments, for example maintenance”, adds Gerd Maurer in conclusion.

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Meta title: TOX drive accelerates the welding of cooking pots

Meta description: An electromechanical servo press from TOX PRESSOTECHNIK makes the accurate bonding process of pots and bases flexible and efficient. Welding specialist Walter Heller built the special machine for Fissler.

Keywords: TOX PRESSOTECHNIK; Fissler; electromechanical servo presses; servo drive; welding tongs; variable stroke;

Captions:



Image 1: While the machine bonds at the rear, the operator can newly equip the two front nests.



Image 2: The three components before bonding: Pot, stainless steel base and aluminum blank.



Image 3: An individual weld point perfectly connects the base, pot and aluminum blank.



Image 4: The servo drive TOX-ElectricDrive individually adapts the stroke of the welding electrode to the respective pot size.

Images: TOX PRESSOTECHNIK GmbH & Co. KG