

Application example

Using ultrasonics to cut and weld various products

PLASTIC WELDING

METAL WELDING

CUTTING

CLEANING

SCREENING



Task

Breathing masks, filters, wound compresses or labels made from non-woven or woven fabrics are usually manufactured in the form of flat pre-cut parts. To ensure that the masks are comfortable to wear, the edges must be soft to the touch but without any fraying. Wound compresses have to have a reliably sealed edge zone to prevent any fibres from entering the wound. The sealed cut edges of labels must be able to withstand many washes.

Solution

Ultrasonic technology offers a cost-effective method of cutting out flat contour parts while simultaneously sealing the edge zone by heating the cutting area. Cut and seal applications for large-area parts demand extreme levels of force. For this reason, they are achieved using robust and powerful USP welding presses with a force of up to 12,000 N. The quality of the process is assured by the universal TCS5 controller. For continuous applications such as label production, components are integrated into cutting systems.

Configuration advantages

Cutting out the pre-cut parts and sealing the edge zone in a single operation makes the production process extremely cost-effective. The hardened anvil, which is made from wear-resistant special-purpose steel and features CNC-ground contour geometry, can be reground multiple times. If extensively welded areas are required, a two-stage anvil system is used, i.e. the welding and cutting processes are performed in the same position but one after the other. The two-stage process is also monitored by the TCS5 controller.



The applications were solved using a USP8000/12000 ultrasonic cut and seal machine in conjunction with the TCS5 process controller/ appropriate components, which were combined in a special system.