Application example

Ultrasonic welding of high-voltage cables and twisted wires

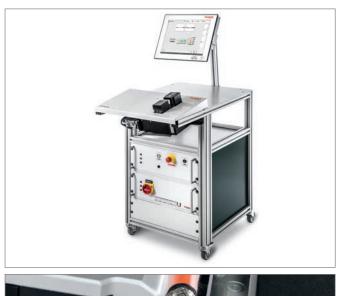| PLASTIC WELDING	METAL WELDING	CUTTING	CLEANING	SIEVING

The applications are realized on a Telso®Splice TS3 ultrasonic wire welding system with integrated parking position by means of a process controller with touchscreen operation and menu-guided software.

Task

As a result of the trend towards miniaturization, housings with integrated cable connections are to be increasingly space-saving, which is why the stripped cable ends must become increasingly shorter. In order to minimize the risk of interference with shielded high-voltage cables or with twisted wires, the cable sheath and the shield should be removed as short as possible, or the length of the untwisted wire ends should be kept to a minimum. Typically, a length of 3 to 4 cm per side should not be exceeded. The positioning of the wires and splices in the welding zone must be as convenient and time-saving as possible.

Solution

In order that such applications can be implemented on a conventional wire splicing system, the tools, in particular the sideshift and finger guard, are modified by creating a clearance for a parking position. This makes it possible to place both the wire ends that have not yet been welded and a splice that has already been welded close to the welding area, i.e. "park" them. In each case, 3 or 2 wires of the same color are welded, which are stripped to a length of approx. 16 mm.

Advantages of this configuration

Due to the parking position close to the welding zone, short cable lengths with distant shielding or an untwisted zone can be implemented. As the tools can be changed quickly and easily, tooling times are kept to a minimum during a batch change. Aluminum and copper-aluminum combinations can be welded with the same machine. With this configuration, for example, a high-voltage cable with a Y-connection with 3 cables and 2 conductors each, or a twisted cable with 2 wires can be welded without any problems. Tolerance windows for splice height, welding time as well as maximum power can be programmed for quality monitoring.

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